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ABSTRACT

This project sought to improve the utility of science and social studies textbooks used by mainstreamed handicapped children, by considering the special needs of children who are sensorily or cognitively impaired. The project reviewed the literature, developed a text analysis tool to determine if textbooks contain effective teaching strategies, analyzed 12 social studies and science textbooks at elementary and secondary levels, verified the initial analysis by teachers using the texts with students experiencing learning problems, and disseminated the findings at a national conference. Major findings in the textbook analysis were: (1) many textbooks failed to incorporate effective methods of instruction for students with learning problems; (2) most activities for special learners were poorly integrated, often inappropriate, and dull; (3) textbooks for secondary students, in particular, seldom included important information about organizational, study, and test-taking strategies; (4) textbooks did not highlight text structures known to facilitate comprehension and recall. Recommendations are offered to publishers in order to make textbooks more usable for mildly handicapped students, and strategies are offered to teachers to make existing textbooks more usable. Nine appendixes making up the greater part of the document include appraisal forms, a resource packet, verification materials, the assessment tool, and materials related to the 1988 conference on improving textbook utility, including the conference brochure. A list of 63 references is also provided. (JDD)

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FINAL REPORT CERTIFICATION FORM

CONTRACT NUMBER: 300-86-0118

INSTITUTION: Education Development Center, Inc.
Newton, MA

PRINCIPAL INVESTIGATOR: Jean Ciborowski

COMPETITION: RFP 86-045

REVIEWER: Doris L. Cargile

TITLE: Improving the Usability of Textbooks for Mainstreaming Handicapped Children

SUMMARY OF FINAL REPORT

Purpose

The overall purpose of this 18-month contract was to improve the utility of science and social studies textbooks used by mainstreamed handicapped children so that the textbooks would be more appropriate to the special needs of children who are sensorily or cognitively impaired and who use the same texts as their non-handicapped classmates. The project consisted of two distinct phases. The objectives for Phase I included: (1) analyzing the learning characteristics of children who have sensory or cognitive disorders; (2) analyzing the most widely used texts in science and social studies to discern the learner expectations inherent in the texts, teacher manuals, and related materials; (3) identifying the discrepancies in the probable learner characteristics of the target population and the learner expectations inherent in the tests; and (4) obtaining the experiences of teachers in ameliorating the teaching/learning difficulties encountered in using these texts with children who are handicapped. The objectives of Phase II were: (1) to present the findings of this project to representatives of publishers whose texts were studied and (2) to conduct discussions of these findings with a broader representation of text publishers, educators, and parents. It was hoped that these discussions might encourage publishers to take into consideration the requirements of handicapped learners in mainstreamed settings when revising texts traditionally designed for non-handicapped learners.

Results

For the most part, the textbook programs reviewed in this project failed to incorporate effective methods of instruction for students with learning problems. Most of the add-on activities for special learners were often isolated from the context, often inappropriate, and dull. Elementary books were rated better than secondary texts because they made more consistent attempts to integrate some principles of effective instruction (e.g., pre-reading strategies, active reading strategies). Textbooks for secondary students seldom included important information about organizational, study, and test-taking strategies. They generally did not provide teachers with creative ideas for presenting content

or evaluating student performance. Textbooks generally did not highlight text structures known to facilitate comprehension and recall. They were too large and all encompassing, poorly organized, and lacked overt structure (e.g., explicit main ideas, clear statements of problem/solution, cause/effect). The textbook programs were rated fair in integrating features to enhance the reader's interest. The twelve programs reviewed were considered to be visually appealing with good design and graphics. However, given recent evidence that illustrations may distract poor readers, there is a need for further research into the effects of graphics on poor readers.

Implications

It was recommended that there are several ways publishers could make their textbooks more usable to students who are handicapped. Activities could be built in to set the stage for reading (e.g., focusing instruction, activating prior knowledge, previewing the text). Comprehension could be facilitated by teaching students how to engage in active reading, study, and self-monitoring strategies. Other opportunities could be provided for demonstrating mastery of material in addition to written tests. A variety of strategies were also identified to help teachers make existing textbooks more usable for students with learning problems.

Recommendation

The final report should be accepted in its current form and made available to interested individuals through ERIC.

Improving Textbook Usability

FINAL REPORT

EDUCATION DEVELOPMENT CENTER, INC.
Newton, Massachusetts

RMC RESEARCH CORPORATION
Hampton, New Hampshire

This document was prepared pursuant to U.S. Department of Education Contract Number 86-045. The statements and conclusions herein are those of Education Development Center, Incorporated, and RMC Research Corporation, and do not necessarily reflect the views of the sponsoring agency.

ACKNOWLEDGMENTS

Carrying out this project has been both challenging and satisfying; challenging because of its potential impact on educators and publishers and, ultimately, handicapped students; and satisfying because in less than two years, we have accomplished a great deal, especially in terms of arousing interest and initiating the change process.

We would like to thank the U.S. Department of Education, Office of Special Education Programs, for providing the funding under contract number 86-045 and acknowledge the contribution and support of our Project Officers, Paul Andereck and Doris Cargile and Contracts Officer, Douglas Mason.

Throughout the project, our advisors provided expert guidance, feedback, and encouragement. We are grateful to June Foster, Technical Education Research Centers; Jack A. Gerlovich, Iowa Department of Education; Roy O. Gromme, Hubbard Scientific; John G. Herlihy, State University of New York Geneseo; Joseph J. Huckestein, Texas Education Agency; George S. Mischio, University of Wisconsin-Whitewater; Roger R. Rogalin, D.C. Heath and Company; and Lynne Thrope, Education Systems Technology Corp.

The success of the project depended on the collaboration of two organizations, EDC and RMC Research. At RMC Research, Paulette Meleen managed the project and coordinated the Washington conference with the able assistance of Judy Ballester. Larry Rayford conducted the text analysis including selecting and training the teacher-reviewers. As a consultant, Deborah Powell added her expertise in conferencing and working with publishers.

The teacher-reviewers did a superb job analyzing the textbooks, spending many hours in addition to a full teaching load, and sharing their experience with us and with others. We are grateful to the dedication of Louise R. Brewster, Sharon Corologos, Charles Hodsdon, Cheryl Maloney, Joseph P. O'Brien, Julia D. Phelps, Barbara Soris, and Kathy T. Williamson.

We also wish to express our gratitude to the publishers of the texts we analyzed: Harcourt, Brace, Jovanovich; D.C. Heath; Holt, Rinehart, and Winston; Merrill; Scott, Foresman; and Silver Burdett.

Many of our colleagues at EDC deserve our appreciation for their assistance. Each played a role critical to our success. A special acknowledgment goes to Nancy Ames and Judith Zorfass for their wisdom and support, and their careful review and substantive suggestions along the way. Special mention should also be made of Maryanne Primavera and Cecile Heimann for their administrative support.

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Education Development Center, Inc.

EXECUTIVE SUMMARY

With funding from the U.S: Department of Education, Office of Special Education Programs, Education Development Center, Inc. and RMC Research undertook a project to improve textbooks for mainstreamed students with learning problems. The project involved the following sequence of steps

- reviewing the literature on learning problems and effective learning strategies for different special needs populations
- developing a text analysis tool to determine if textbooks contain effective teaching strategies
- using the tool to analyze twelve widely-used social studies and science textbooks at both the elementary and secondary level
- verifying the initial analysis by teachers who use the analyzed texts in classrooms with students who experience learning problems
- disseminating the findings at a national conference attended by publishers, educators, researchers, teacher trainers, professional organizations, and textbook adopters

The major findings in the textbook analysis were:

- Many textbooks failed to incorporate effective methods of instruction for students with learning problems; rather, most activities for special learners were poorly integrated, often inappropriate, and dull
- In particular, textbooks for secondary students seldom included important information about organizational, study, and test-taking strategies
- Textbooks did not highlight text structures known to facilitate comprehension and recall

Based on these findings, we recommended to publishers that in order to make textbooks more usable for mildly handicapped students, they should

- build in activities that set the stage for reading: focusing instruction, activating prior knowledge, and previewing the text
- pay attention to facilitating comprehension by teaching students how to engage in active reading, study, and self-monitoring strategies

- provide numerous opportunities to demonstrate mastery in a variety of ways in addition to written tests

In addition, we identified a variety of strategies that teachers can use to make their existing textbooks more usable for students with learning problems.

The project has already had an impact by opening the door to communication and collaboration among publishers, developers, teachers, students, parents, educational researchers, professional organizations, textbook adopters, and testing services. It is our hope that the collaborative process now begun will continue with the end result being that textbooks are more usable for all students across our diverse nation.

It is strange that we expect students to learn yet seldom teach them about learning. We expect students to solve problems yet seldom teach them about problem solving. And, similarly, we sometimes require students to remember a considerable body of material yet seldom teach them the art of memory. It is time we made up for this lack, time that we developed the applied disciplines of learning and problem solving and memory. We need to develop the general principles of how to learn, how to remember, how to solve problems, and then to develop applied courses, and then to establish the place of these methods in an academic curriculum. (Norman, 1980, p. 97)

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OVERVIEW OF THE PROJECT

THE CHALLENGE

According to the Ninth Annual Report to Congress on the Implementation of the Education of the Handicapped Act, the majority of handicapped children receive special education and related services in settings with nonhandicapped students. Nearly 27 percent of these students receive all instruction, including special education, in regular classes, while 42 percent receive services in the regular classroom part of the day (U.S. Department of Education, 1987). Madeleine Will, Assistant Secretary of the Office of Special Education and Rehabilitative Services, estimates that an additional 10 to 20 percent of students in general education are not enrolled in special education, but experience learning and behavioral problems that impede their progress (Will, 1986).

Together these groups constitute a significant number of hard-to-teach students who are often unprepared to handle the demands of social studies and science classes. Poor reading, organizational, attentional, and study skills interfere with their ability to access information from content textbooks (Torgesen, 1985; Torgesen & Licht, 1983). When textbooks are poorly organized and have ambiguous structures, matters are made even worse for students with learning problems (Armbruster & Anderson, 1984).

THE RESPONSE

The U.S. Department of Education, Office of Special Education Programs (OSEP), has a history of supporting efforts aimed at making textbooks more usable for students with learning problems and at aiding teachers in overcoming textbook limitations. Building on knowledge gained from curriculum materials developed in the 1970s and the textbook adaptations in the early part of

this decade, OSEP recognized the need for educators, researchers, and publishers to collaborate in improving the usability of textbooks. In October 1986, OSEP awarded a contract to Education Development Center, Inc. (EDC) and RMC Research Corporation to analyze the usability of social studies and science textbooks for students experiencing learning difficulties, to develop recommendations for improving textbooks and teaching strategies, and to work with the educational and publishing communities to bring about change. In carrying out the project, we drew upon previous work funded by OSEP as well as the latest research in reading, the cognitive sciences, and effective instruction.

EDC and RMC Research undertook a qualitative analysis of twelve widely used elementary and secondary social studies and science textbook programs, in order to determine how well they accommodate students with learning problems. We defined textbook programs as including the teacher's edition, the student's edition, and all ancillary materials such as workbooks, teacher resource materials, lab manuals, and test booklets. The findings of the analysis were independently verified by elementary and secondary social studies and science teachers who were using the textbooks in their classrooms. Based on the findings, recommendations for improving the usefulness of textbooks were presented to publishers, scholars and teachers at a national conference held in Washington D.C. in February, 1988.

This report describes how each component of the project was conducted, summarizes the findings, and presents recommendations and conclusions.

SUMMARY OF PROJECT ACTIVITIES

The project was designed in two phases, each with its own goal. Phase I included an extensive review of the literature that described common characteristics of students with learning problems, effective treatment interventions, and textbook features known to facilitate learning; development of a comprehensive questionnaire to analyze elementary and secondary social studies and science textbooks; review of twelve leading texts; and a meeting for teachers who used the books to verify the findings. Phase II culminated in the national conference for publishers, educators, researchers, and textbook selectors at which project staff presented their findings and recommendations.

Responsibility for project tasks was divided, with RMC Research taking the lead on the text analysis and logistics for the national conference, and EDC conducting the literature review, holding the verification conference, writing the conference reports, and managing the overall project. Table 1 provides an overview of the project.

REVIEW OF THE LITERATURE

EDC staff spent the first three months of the project conducting a thorough review of the research literature on the common characteristics of students with learning problems, treatment interventions, and textbook features. As 1986 came to an end, project staff developed a report summarizing the results of the literature review. The draft was sent to the project's advisory panel prior to a meeting held at EDC on December 15, 1986. Following more than six hours of lively discussion with advisors June Foster, Roy Gromme, George Mischio, and Lynne Thrope, project staff revised the literature review and submitted it to the Project Officer, Paul Andereck. Although the formal review of the literature was complete, staff continued to keep abreast

Table 1

OVERVIEW OF PROJECT TASKS

ACTIVITY	BRIEF DESCRIPTION	WHAT WE LEARNED
Review of Past Research November 1986-February 1987	In-depth review of literature and consultation with project advisory panel, drawn from publishing, special education, and science/social studies community.	• Many students with learning problems are mainstreamed in regular social studies & science classes. • Common problems exist across groups of students with varying learning problems. • Several promising instructional strategies have proven effective with these special learners and may also benefit all learners.
Textbook Analysis March - April 1987	Comprehensive analysis of 12 leading social studies and science textbooks by eight experiences and well-trained teacher reviewers.	• Many texts fall short of helping teachers accommodate the increasingly diverse classroom population, particularly textbooks at the secondary level.
Verification of Textbook findings June 1987	Forty teachers met for two days to discuss textbook findings and generate strategies for teachers to compensate for textbook limitations.	• Teachers agreed that textbooks, in general, could be improved and better designed in order to meet the needs of more students in a given classroom. • Teachers called for guidelines to help them become

		better textbook selectors and users: they found the "streamlined" tool useful in helping them evaluate textbooks.
Review and Analysis of Current Trends July 1987 - December 1987	Staff continued to review the research, consult with scholars and project advisors, meet with publishers and other interested parties.	• Textbook selectors should assess instructional design in conjunction with content, since the former helps ensure that students access the content.
Preparation of Streamlined Text Analysis Tool October - January 1988	Pilot testers, teachers, and advisors reviewed the tool that can be used to examine instructional design of teacher and student materials.	• The tool can help teachers and others determine how well a textbook program accommodates diverse learners and also help publishers assess and improve their own texts.
Preparation of Conference Report December 1987 - January 1988	Project staff prepared a synopsis of textbook review findings, publisher recommend-ations, and possible solutions for teachers.	
Publishers' Conference February 1988	Over 100 selected educational leaders (teachers, school administrators, state adoption committee members, curriculum developers, scholars, teacher trainers) as well as key educational publishers will meet in Washington, D.C. to discuss project findings and recommendations. Participants will generate viable action plans for improving Textbook usability.	• Market needs will be expressed. • Publishers will see that the market is ready for more usable instructional design in textbook programs.

of emerging research throughout the project. The following is a brief summary of EDC's review.

Common Characteristics of Students with Learning Problems

In the last ten years, educational researchers as well as practitioners have begun to argue that special educators should not plan instruction on the basis of student categories or labels, but rather on student characteristics (Lloyd, 1984; Reynolds & Balow, 1972). Describing the learner characteristics rather than labeling the learner represents an important shift in perspective; this shift allows educators to see all "handicapped" students on the same learning continuum, and furthermore, facilitates a more accurate match between learning needs and instruction. Most importantly, this perspective allows those students not enrolled in special education, but who nevertheless experience learning problems, to profit from effective instruction once reserved only for their special needs peers (Stainback & Stainback, 1987).

Based on the premise that a descriptive diagnosis will yield more effective intervention than a handicapping label, we reviewed studies that identified characteristics of students experiencing difficulties in one or a combination of areas. The most common areas of difficulty are:

- Language and Literacy Skills

  Deficits in language and literacy development are most often manifested by reading and writing problems. Young children who exhibit reading difficulties often have poor word recognition and decoding skills and writing difficulties that are related to poor control, spacing, and legibility. As the demands of the curriculum increase and as children move up in grades, common problems include poor comprehension in reading and disorganized written expression (Torgesen & Wong, 1985). Some researchers argue that most handicapped students enter school with a highly specific deficit

that, left undiagnosed, becomes a more generalized language/learning problem. This in turn affects motivation and acquisition of effective reading and writing strategies (Stanovich, Cunningham, & Freeman, 1984; Bashir, 1987).

- Attention and Memory Skills

Many learning handicapped students exhibit difficulties in two cognitive functions: attention and memory. The study of attention processes has revealed that students who suffer in this area tend to have difficulty concentrating, appear easily distracted, and are often impulsive in their approaches to academic and social demands (Krupski, 1980; Levine, 1984). The study of memory processes has described learning handicapped students as passive, often failing to employ strategies for organizing and recalling information (Torgesen & Licht, 1983).

- Metacognitive Skills

This research serves as an important base for examining the metacognitive skills of poor learners as well. Not surprisingly, studies have shown that many of these students fail to employ effective strategies of self-monitoring, self-checking, and other self-regulating behaviors when engaged in academic and social tasks. Under the direction of Donald Deshler, The Institute for Research in Learning Disabilities (Lawrence, Kansas) has led the way in helping us understand the metacognitive deficits of learning handicapped students. Other researchers have provided powerful evidence that, with training, students can be taught to learn effective strategies, principles, and techniques they can apply across subject settings and social situations as well (Palincsar, 1986; Wong, 1987).

- Motivation and Social Skills

Considerable evidence exists that students with learning problems can have problems beyond the academic domain (Schloss, 1984; Shores, 1987). The two areas that have received the most attention are social competencies and motivation for learning. Bryan and Bryan (1978) have made a significant contribution to our understanding of how children's social experiences can influence their feelings of competence and their perceptions of others' expectations of their behavior. These feelings in turn can affect academic performance, risk-taking, and other problem solving behaviors.

> Longitudinal observations of children and adolescents with learning problems have also raised important questions about the cumulative impact of academic failures on student motivation. Many students with learning problems experience a cycle of learned helplessness. That is, they fail because of a specific disorder, learn to doubt their intellectual abilities, and come to view further effort as futile. Breaking the cycle of learned helplessness has been a focus of much of the research on student motivation and attitudes (Licht & Kistner, 1986).

Treatment Interventions

The question of how to help students succeed in learning has inspired a rich body of interventional research in the last fifteen years. While generalizability and maintenance data continue to be limited, a number of instructional interventions have shown considerable promise in improving academic achievement. These interventions are grounded in two major theories: schema theory and metacognitive theory.

Schema Theory

Schema theory helps make clear how learners acquire and integrate new knowledge. According to Anderson and Pearson (1980),

> Whether we are aware of it or not, it is the interaction of new information with old knowledge that we mean when we use the term comprehension. To say that that one has comprehended...is to say that s/he has found a mental "home" for the information...or else that s/he has modified an existing mental home in order to accommodate that new information. (p. 225)

Studies in reading comprehension have specifically addressed how the "old" information (or schemata) can exert influence on comprehending text. Evidence supports the notion that students can be taught to actively employ strategies for comprehending and organizing text (Brown, Campione & Day, 1981; Levin & Pressley, 1981; Ohlhausen & Roller, 1988; Palincsar & Brown, in press).

This research is encouraging for mildly handicapped students who often fail to draw upon their prior knowledge as they read (Snider & Tarver, 1987). A number of interventions presented during the pre-reading phase, when teachers prepare students for instruction, have shown promise in improving comprehension, including

- using reciprocal teaching techniques that activate students' prior knowledge through discussions and open ended questions (Palincsar & Brown, 1988, Slavin, 1983)
- presenting analogous information and inferential training (Hansen, 1981; Hansen & Pearson, 1983);
- using graphic organizers or graphic displays to help students see links between old and new information (Johnston and Pearson, 1984; Sinatra, Berg, and Dunn, 1985)
- using simulations, demonstrations, and hands-on learning activities that serve to tap prior knowledge and foster motivation (Foster, 1985; Lang, 1986).

Metacognitive Theory

Metacognitive theory has made a major contribution to our understanding of how one regulates one's own learning using skills that involve planning, checking and evaluating (Baker & Brown, 1984; Flavell, 1981). Flavell (1976), one of the pioneers of the study of metacognition, describes it this way:

> Metacognition refers to one's knowledge concerning one's own cognitive processes....for example, I am engaging in in metacognition if I know I am having more trouble learning A than B; if it strikes me that I should double check C before accepting it as a fact. (1976, p. 232.)

Two metacognitive skills are discussed in the literature that help us understand what contributes to reading difficulties: comprehension monitoring and hypothesis formation-evaluation.

Palincsar and Brown (1984) found that they could teach poor readers how to self-monitor so that they could take remedial action when they were confused or failed to comprehend. Hypothesis formation-evaluation involves teaching students to use clues in the text to generate, evaluate, and revise hypotheses about what they are reading (Idol, 1987). Interventions that have shown promise in helping learners to develop both these important skills include

- teaching students self-questioning procedures to use while reading (Alley & Hori 1981; Wong & Jones, 1981)
- teaching students how to be more sensitive to text structures and other features in the text that will signal important information (Gold & Fleisher, 1986; Smith & Friend, 1986; Anderson, Osborn & Tierney, 1984)
- providing students with guided pre-reading and guided reading techniques such as the use of advanced organizers or mapping exercises (Armbruster, 1980; Bergerud, Lovitt & Horton, 1988; Flood, 1986; Idol, 1987)

Models of Effective Instruction

Increased student achievement has also been addressed through models of effective instruction. One approach that has been particularly successful with poor learners is cooperative learning. At the heart of cooperative learning is collaboration among learners (Slavin, 1983). Johnson & Johnson (1975; 1983) and Johnson, Johnson, Holubec, & Roy (1984) describe how cooperative learning can promote greater achievement, self-esteem, and motivation among students with learning problems as well as their average-achieving peers. These outcomes are accomplished through placing students with varying abilities and skills on small teams that are structured to foster group problem solving, creativity, and responsibility.

Other models suggest ways that teachers can alter the representation of knowledge to accommodate diverse learning styles. Based on Madeline Hunter's model of effective instruction, Lyon (in press), has developed an instructional approach (CARETONS) for teachers who have reading disabled and other learning disabled students. His research has been particularly helpful in sensitizing general education teachers to students who do not learn in the expected ways, in providing all teachers with skills to assess the demands of instructional materials, and finally, in assisting them in developing alternative methods of instruction and evaluation.

Textbook Features

A relatively recent body of research focused on the quality of textbooks and other instructional materials to determine their influence on learning. Unlike many studies that address textbook content, this research has focused on instructional design and textbook features (Anderson & Armbruster, 1984; Durkin, 1984; Osborn, 1984, Thrope, 1986).

Although the research base is limited, researchers at the Center for the Study of Reading have identified a number of textbook features that can facilitate both comprehension and recall, and render what Armbruster and Anderson (1988) call "considerate textbooks." (For a detailed review of the textbook research, see Armbruster & Anderson, 1988.) Their analyses have produced criteria for "considerate" or "user-friendly" texts. These criteria involve three features: structure, coherence, and audience appropriateness. Following is a brief explanation of each.

- Structure is the text feature that has received the most attention in the literature. More explicit structure can be achieved through the use of signal words (e.g., titles, preview/summary statements, pointer words such as first, second, third, etc.) that

cue the reader to a specific type of structure (e.g., compare/contrast, problem/solution, sequence of events, etc.). Clearly, the better structured the text and the more obvious the structures are to the reader, the more likely the reader will remember the information (Loman & Mayer, 1983; Thorndyke, 1977).

- Coherence refers to how well ideas are integrated and flow within the textbook. Coherent textbooks contain explicit statements about the relationship of ideas, clear pronoun references, connectives that convey the relationships among ideas, and graphics that clearly support text. Armbruster and Anderson (1988) summarize numerous studies that have established the importance of coherence in comprehension and recall of text. Their research has also pointed out that imposing readability formulas on texts adversely effects coherence; they warn textbook writers that by shortening sentences to conform to the formula, important words are often deleted, rendering the text less coherent and understandable.

- Audience appropriateness refers to the match between the text and the reader's level of knowledge and skill. A large body of research has been conducted that shows the importance of the reader's relevant prior knowledge of the topic and vocabulary in facilitating comprehension of text. Metadiscourse (or talking directly to the reader), thorough explanations of fewer topics rather than superficial treatment of many topics, and the use of analogous information to explain complex concepts are features that take into account the background of the reader.

THE TEXTBOOK ANALYSIS

EDC and RMC Research staff used the literature review as a basis for analyzing textbooks. The analysis included the following series of eight separate but interrelated steps: selecting textbook programs, developing the text analysis coding forms, selecting and training the teacher-reviewers, using the forms, maintaining reliability, debriefing, and synthesizing and verifying the findings.

The Analysis Process

Step 1: Selecting Textbook Programs

OSEP called for an analysis of the social studies and science textbooks most widely used in elementary and secondary schools across the country. In order to determine which textbook programs were "most widely used," RMC Research contacted a variety of organizations for information regarding publishers' market standings in elementary and secondary science and social studies textbook sales. These organizations included the Association of American Publishers, the International Reading Association, Market Data Retrieval, the Educational Products Information Exchange, textbook adoption researchers, textbook monitoring groups, science and social studies curriculum centers, members of large textbook adoption committees, professional organizations in science and social studies education, and a variety of educational publishers. We asked each source to identify which publisher it believed held the largest share of the market in each subject area and grade level. Subsequently we selected the textbook programs listed in Table 2.

Once we identified the publishers and respective textbook programs, appropriate sales personnel were contacted within each publishing house to obtain three copies of all of the components comprising the identified textbook program.

Step 2: Textbook Analysis Coding Forms

Project staff used information from EDC's comprehensive review of the literature on learner characteristics, effective instruction, and textbook features as the basis for designing the questionnaire used to analyze the textbook. The appraisal focused on what instructional design and textbook features, known to be effective with students with learning problems, were

Table 2

ANALYZED TEXTBOOKS

SCIENCE	SOCIAL STUDIES
Science, Silver Burdett (1987) Grade 1	Families and Neighborhoods Silver Burdett (1986), Grade 1
Heath Science, D.C. Heath (1985) Grade 3	City, Town and Country, Scott, Foresman (1986), Grade 3
Holt Science, Holt, Rinehart, and Winston (1986), Grade 5	The United States: Past To Present, D.C. Heath (1987), Grade 5
Focus on Earth Science, Merrill (1987), Grade 8	United States History: Reconstruction to the Present Merrill (1986), Grade 10
Focus on Physical Science, Merrill (1987), Grade 9	Land of Promise: A History of the United States, Scott, Foresman (1987), Grade 10
Modern Biology, Holt, Rinehart, and Winston (1985), Grade 10	Triumph of the American Nation Harcourt, Brace, Jovanovich (1986), Grade 10

incorporated into the textbook programs. By instructional design features, we mean the pedagogy built into the program that suggests how the teacher and students are to use the materials (e.g., the importance of activating students' prior knowledge and linking it to the new information, teaching reading and learning strategies, and accommodating diverse learning styles).

What emerged from the literature is reflected in the underlying structure of the forms, that is, that the teaching/learning cycle has three recursive phases: (1) getting students ready to learn, (2) engaging students in the learning activity, and (3) having students demonstrate competence and extend their knowledge. Table 3 lists the components of each phase.

The 32-page appraisal form contained a total of 200 questions, divided into three parts. A copy of the form is displayed in Appendix A. One part, the Instructional Strategies Form, was used with those components of each textbook program that offered suggestions for using the textbook program in an instructional context. These components typically included the teacher's edition of the core text, supplemental instruction guidelines such as a "teacher's resource packet" or laboratory guide, or more specialized materials for adapting instructional strategies to the needs of slower learners.

The second part, the Instructional Materials Form, was used to review the components of each textbook program that were intended to be used by students. This form directed reviewers' attention to specific features of the various materials, which typically included the student's edition, workbooks, enrichment activity sheets, tests, and other such materials.

The third part, an Overall Appraisal Form, provided an opportunity for the teacher-reviewers to summarize their opinions of each textbook program's strengths and weaknesses in six key

Table 3

PHASES OF LEARNING

I. Phase I: Getting Students Ready to Learn
   - Focusing Instruction
   - Activating Prior Knowledge
   - Previewing Concepts, Vocabulary, Text Structure

II. Phase II: Engaging Students in the Learning Activity
   - Helping Students Comprehend Information in the Textbook
   - Teaching Study Strategies
   - Providing Experiential Activities
   - Emphasizing Metacognition
   - Employing Cooperative Teaching Strategies

III. Phase III: Having Students Demonstrate Competence and Extend Knowledge
   - Having Numerous Opportunities to Demonstrate Mastery
   - Providing a Variety of Ways to Demonstrate Competence
   - Extending and Applying Learning

areas related to the usability of the materials with diverse learners (appropriateness of content, motivation, strategy instruction for both students and teachers, suggested improvements in instructional materials and strategies). Completing this form was the final step in examining each textbook program.

The teacher-reviewers were not asked to examine textbook content. Although we acknowledge its importance and its significant relationship to the instructional design, content evaluation was beyond the scope of the project. A well-designed textbook program (i.e., pedagogically sound instructional strategies, clear paragraph and lesson structures, logically related chapters, and high quality writing) will only enhance the content and, presumably, comprehension. (For text analyses related to content, see Gagnon, 1986; Cheney, 1987; Larkins and Hawkins, 1987.)

It is also important to point out that we did not examine readability. Numerous scholars and educators have identified the use of readability formulas as impeding the effort to improve the quality of textbook writing. Readability formulas have been criticized because they often result in prose that contains short sentences and simple vocabulary, and exclude connectors that can help make the text easier to read. Armbruster, Osborn, and Davison (1985) point out that readability formulas fail to take into account important characteristics of both the text and the reader that affect comprehension: for example, in the text: the content difficulty, organization of ideas, the author's style, and page layout; in the reader: motivation, interest, purpose, and perseverance. Bernstein and Woodward (1986) and many others interested in textbook reform have called for a halt in the use of formulas and recommend that the quality of textbook writing be closely examined in the textbook adoption process.

Step 3: Selecting and Training the Textbook Reviewers

EDC/RMC Research elected to ask teachers to review the textbooks to draw on their first-hand experience with students (including students with learning problems), with textbooks, and with the teaching process. We used several criteria to select four elementary and four secondary teachers to participate in the project. First, each teacher-reviewer had to have taught at least one of the targeted science or social studies subjects. Second, each teacher had to have worked with "mainstreamed handicapped" students within that subject area. Third, each teacher had to be able to commit about 100 hours to the project over a span of about forty days, and be able to attend training and debriefing sessions on scheduled dates. The teacher-reviewers, who were reimbursed for their time and effort, were:

Louise R. Brewster, Grade 6, Science
Underhill, Vermont

Sharon Corologos, Elementary Science
Richmond, Vermont

Charles Hodsdon, Grade 9-12, Chemistry
Topsfield, Massachusetts

Cheryl Maloney, Grades 8-11, History
Weston, Massachusetts

Joseph P. O'Brien, Grade 4, Social Studies
Underhill, Vermont

Julia D. Phelps, Junior High, Social Studies
Merrimack, New Hampshire

Barbara Soris, Grade 1, Social Studies
Dover, New Hampshire

Kathy T. Williamson, Grade 6, Science
Richmond, Vermont

Before participating in the textbook analysis phase of the project, the teacher-reviewers attended a two-day training session. This training session served many purposes, including

familiarizing teachers with the overall goals and objectives of the study, the project timeline, and the textbook review process.

The teachers intensely reviewed the three coding forms and discussed various interpretations of specific items. Each time a potential ambiguity or problem was raised, the group reached consensus regarding its resolution and then established specific rules to follow when such problems arose during the actual textbook review process.

During the training session, we gave the teacher-reviewers an opportunity to practice using the forms to examine "real" textbook material. Working both in small groups and independently, all of the teachers were assigned the same chapter from a fifth grade social studies textbook and asked to employ the three forms in its review. This provided a common base for discussing particular issues and concerns related to using the coding forms. After examining each chapter, several hours of large group discussion further addressed problems in using the forms, and allowed teachers to ask questions to clarify final review procedures.

Step 4: Using the Textbook Analysis Forms

The twelve textbook programs were divided into four groups by grade and content: elementary science, elementary social studies, secondary science, and secondary social studies. We assigned two of the elementary teachers to review the three elementary science textbook programs and two to review the elementary social studies texts; two of the secondary teachers reviewed the three secondary science programs, and two reviewed the three secondary social studies textbooks. Assigning two teacher-reviewers to each textbook cell allowed us to determine the extent to which the coding process was reliable and valid.

Staff selected, at random, a minimum of five chapters for analysis in each textbook program (teacher's edition, student edition, and ancillary materials). We stipulated that at least one entire unit had to be included in the five chapters reviewed. In the few instances in which units in a given textbook program were longer than five chapters, an entire unit was still reviewed, plus an additional two chapters randomly selected from other parts of the textbook. Some of the teacher-reviewers, therefore, examined more than five chapters.

The teacher-reviewers used the Instructional Strategies Form first to examine all program components that offered advice or guidelines to teachers for covering the material contained in that chapter. Next they used the Instructional Materials Form to examine the student's materials, including workbooks, enrichment activities, unit or chapter tests, etc. After all chapters in a given textbook program were examined, teacher-reviewers then completed an Overall Appraisal form that summarized the strengths and weaknesses of that program.

Each teacher-reviewer turned in a minimum of eleven coded forms for each textbook program: five Instructional Strategy Forms (one per chapter), five Instructional Materials Forms (one per chapter), and an Overall Appraisal Form.

Step 5: Maintaining Reliability During the Coding Process

We employed several strategies to maintain a high degree of reliability during the textbook review process. In addition to the comprehensive training session, the teacher-reviewers submitted their work as it was completed to the Coordinator of Textbook Review. This allowed him to compare responses, clarify issues, and correct misconceptions as the textbook analysis progressed.

Another mechanism to ensure a high degree of reliability was providing a resource packet containing examples of instructional strategies and features of instructional materials drawn directly from the textbook programs under review. Each example was labeled to correspond with particular items on the coding forms. We encouraged the reviewers to use this resource packet when they were undecided as to how to code particular items. (See Appendix B for the Resource Packet.)

In addition to recording their responses on the coding forms, reviewers were also asked to cite examples in the text that illustrated their responses. This provided yet another check on reliability.

Step 6: Teacher-Reviewer Debriefing Session

Each of the eight teachers spent between 90 and 125 hours analyzing the assigned textbooks. When they completed their analysis, six of the teachers were able to attend a one-day debriefing session to discuss a number of issues. We encouraged them to comment on their perceptions of the strengths and weaknesses of the textbooks, strengths and weaknesses of the forms, and on the review process in general. This group discussion provided project staff with the first opportunity to identify the major findings across grade levels and subject areas.

Below are highlights of the debriefing session with quotes from the teacher reviewers:

1. The text analysis form emerged as a useful tool and the process of reviewing multiple texts increased teachers' sensitivity and knowledge in assessing textbook programs.

"...I thought all of these forms were very helpful and really made us look at these textbooks in a way that we would never have done on our own." (Louise Brewster)

2. Reviewers thought their findings would not differ significantly if this project was about "regular" students (i.e., these findings generalize across all learners).

"What's good for special ed kids would probably be good for all kids." (Sharon Corologos)

3. In secondary social studies particularly, books are teacher-centered, not learner-centered. The books emphasize a lecture format.

"The thing that I found emphasized in the secondary social studies textbooks was the lecture format, the talking head. The teacher is the talking head and kids sit and are little old recorders of the talking head...There wasn't a lot of creativity on the teacher's part and no creativity on the student's part--it was just sit, read, and write." (Julia Phelps)

As a corollary, secondary texts devote more time to teaching content than to process instruction.

4. Enrichment activities were often reserved for the <u>achievers</u> or better students. Activities for special learners were often boring, basic skills work/drills.

"You know the thing that I found repeatedly--the books would talk about enrichment activities...and they were kind of fun things, political cartoons or interviews of people, things that really got the kids involved. But those were for the achievers...Those kind of enrichment activities are probably the best kind of thing you could do for kids at any level." (Julia Phelps)

5. Activities or approaches for "special learners" often appeared to be token attempts or add-ons--not well integrated with the chapter/unit goals.

"You got two or three tips for handicapped students, often for the visually or physically handicapped, but they didn't tie

into the goals of the lesson...My favorite one is for children with behavioral problems. High motivation and low tension. If there is a child in your classroom with a behavior problem, then just up the motivation and lower the tension and you can teach them what's in this book...?!" (Louise Brewster)

6. A frequent comment was that books need to let teachers know what the "core" or most important information is rather than expect all the information to be taught.

> "Nowhere does it say what's most important to teach...nobody wants to say...That's why teachers only do standup lecture format. There is just no time when you have so much material to cover. I found the best way to help mainstream diverse learners is to pick the one thing they should learn above all else and then you have time to do some activities with them." (Cheryl Maloney)

7. Publishers make too many assumptions about students as well as teacher competencies. However, teachers lack consensus on what they want.

> "I think that what we are forgetting is the sense of what a child will do if he knows what he should do. If you only tell the teacher what to do and you don't put that same information in the student text, how are the students supposed to know what is expected of them?" (Sharon Corologos)

> The directions for teachers are "very inconsistent ...'read the first four pages of the chapter,' and that's all it would say. You go to another lesson and it would not tell you to read anything. It would just start with the questions to discuss. Very poor reading skills and reading strategies, especially vocabulary." (Joe O'Brien)

> "I don't want a textbook to tell me what to do. You do this first, you do this second. But I would like to have much information ...then I can pick and choose..." (Louise Brewster)

8. Books were lacking in their attention to study skills. Strategies to teach study skills were not systematically or frequently woven into chapters. Information about study

skills often appeared in the introductory material, but was not well integrated into instruction.

> "The study skills for the assignment followed chapter 7 so I assume they didn't have to study in chapters 1 through 6." (Kathy Williamson)

> "At the very beginning of the book, it said 'these are the basic science skills that you need. Do before chapter 1'...and then you don't do any more for the rest of the year." (Charles Hodsdon)

9. Books were lacking in telling teachers the prerequisite knowledge required for any given chapter.

> "Publishers need to let us know what the prerequisite knowledge should be. Somewhere in the middle of the lesson it said, 'As you know,' and I'm sitting there thinking, 'How should I know this?' And then I realized that the chapter that I didn't preview had presented that one fact. Wouldn't it be nice if the teacher knew that because maybe the teacher decided not to teach that chapter." (Joe O'Brien)

10. In most texts, vocabulary words were highlighted, but they were not necessarily the most important words. Other words teachers thought students needed to know were omitted. Concepts were rarely introduced much less explained. Once highlighted, there were often no instructions for teaching the vocabulary or definitions for students.

> "The words they chose as vocabulary amazed me...words that the kids probably already knew...Then there would be highly technical words that they wouldn't highlight as a vocabulary word..." (Kathy Williamson)

> "...no help from the publishers that this is going to be a tough concept or a tough word." (Cheryl Maloney)

11. It was not easy to coordinate the various components of the textbook program. Also the components did not necessarily relate well to one another.

> "...you are sitting there with those nine pieces saying, 'Do I use this first, or do I

use this last, or is this for the kid that doesn't...'" (Charles Hodsdon)

"Some of it was in this book, some of it was in a resource guide..." (Sharon Corologos)

"...a different author wrote each component..." (Cheryl Maloney)

12. While some publishers were consistent in their approach to conveying information, others were inconsistent from chapter to chapter. Reviewers wondered if a "different author" was called in to write a chapter as the approaches appeared incongruous.

"...There were chapters that felt like they had a different author. The grouping was different, the motivation and the activities, almost the sense that the words were different." (Kathy Williamson)

Step 7: Synthesizing the Appraisal Forms

When the teacher-reviewers completed their analyses of the textbook programs, the Coordinator of Textbook Review organized the Instructional Strategies and the Instructional Materials Forms by subject area, grade level, and publisher. He collapsed responses and comments from both reviewers onto a single profile sheet for each textbook program.

Because the Overall Appraisal Forms were more qualitative in nature than the other two coding forms, they were also more difficult to synthesize. The form did not ask the reviewers to check off whether a textbook included a specific feature or advocated a particular instructional strategy. Rather, it elicited open-ended responses about the overall strengths and weaknesses of the individual programs.

In order to consolidate Overall Appraisal Form data, project staff first reviewed the teachers' comments about each textbook program, consolidating them to the greatest extent possible. The consolidated comments were then transferred onto blank Overall

Appraisal Forms, with notes to indicate those issues and concerns that were addressed in the same manner by different reviewers. This system allowed all comments to be consolidated onto one form per textbook program, while at the same time capturing the extent of agreement and disagreement between each pair of teachers.

Step 8: Teacher Verification Meeting

Once the analyses were completed, forty highly-qualified elementary and secondary social studies, science, and special education teachers were recruited to verify the textbook analysis findings. (See Appendix D for list of verification teachers.) We asked New England area sales representatives from the publishers whose texts were analyzed to provide names of school districts that used the editions of the textbooks we analyzed. Project staff contacted superintendents and building principals for names of outstanding teachers who used the texts in classes that included mainstreamed students. Three teachers who used each of the twelve textbooks were invited to attend the two-day meeting held June 29 and 30, 1987 in the Newton, Massachusetts, Marriot Hotel. The conference served three major purposes: (1) to verify the findings of the analysis; (2) to provide feedback on the usefulness of the analysis tool; and (3) to stimulate the identification of strategies teachers could use to overcome the limitations of textbooks. Information packets, mailed to each teacher prior to the conference, included a simplified form of the analysis tool. Teachers were asked to use the tool to review chapters in two different textbooks.

Following a keynote speaker, project staff provided an overview of the characteristics of students with learning problems and of the project. We then divided the teachers according to textbook used so that they could compare the results of their own reviews and come to group consensus. The staff synthesized those results for presentation to the fully assembled group on the second day.

To obtain feedback on their use of the simplified text analysis form, we facilitated discussions in groups divided by grade level and subject area. In the final session, we asked teachers to brainstorm strategies that they use to overcome the limitations of the textbooks. Following the meeting, each teacher submitted a description of ten strategies they had found to be effective in their classes, particularly with poor learners. Project staff selected some of the best strategies and included them in Appendix A of the Conference Report. They are also incorporated into a chart to be found below in the section entitled Recommendations for Teachers.

The verification session had several positive outcomes. Teachers overwhelmingly supported the initial textbook findings and they affirmed the usefulness of the simplified text analysis tool. From the small group worksheets, the staff gathered information on the strengths and weaknesses of each text and suggestions for improving its usefulness. Comments from the analysis forms and group discussions about the process assisted staff in further refining the prototype tool.

Highlights of the Textbook Findings

Compiling all the information gathered from the literature review, the textbook analysis, and the verification meeting, we identified the following major findings:

- Effective Instruction

  For the most part, the textbook programs reviewed fell short in accommodating students with learning problems by failing to reflect effective methods of instruction. Rather, attempts to meet the needs of these students appeared as add-on "activities for special learners." They were often isolated from the context, inappropriate, or dull.

Elementary books were rated better than secondary because they made more consistent attempts to integrate principles of effective instruction (e.g., pre-reading strategies, active or other guided reading strategies).

Secondary programs seldom included important information about organizational, study, and test-taking strategies (e.g., advanced organizers, semantic mapping exercises). They generally did not provide teachers with creative ideas for presenting content or evaluating student performance.

Most programs were criticized for not emphasizing the importance of ongoing teacher evaluation. Books were inconsistent in providing teachers with guidance about checking prerequisite knowledge and skills and assessing misconceptions before proceeding.

- Textbook Features

In general the textbook programs reviewed failed to integrate structural features that are widely known to facilitate comprehension and recall.

Secondary textbook programs were rated poorest in accommodating students with reading and other learning problems. They were too large and all-encompassing, were poorly organized, and lacked overt structure (e.g., explicit main ideas, clear statements of problem/solution, cause/effect).

Textbook programs were rated fair in integrating features to enhance the reader's interest. Elementary books were inconsistent in their use of metadiscourse, or "friendly-talk," and secondary textbooks tended to lack an engaging writing style.

There were two additional findings that surfaced in the process of analyzing the textbooks that are worth noting, although they do not relate to instructional features. The twelve programs we reviewed were considered, in general, to be visually appealing with good design and graphics. However, given recent evidence that illustrations may distract poor readers, there is a need for more research into the effect of graphics on poor readers.

Second, there was substantial discussion about the usability of ancillary materials. Concerns centered around the sometimes weak relationship between the ancillary materials and the context of the lesson, the lack of direction for their use, and the assortment of components that made managing them frustrating.

Recommendations for Publishers

From these findings, the project developed a set of specific recommendations for publishers, organized under each phase of instruction. As appropriate, content and grade level are identified.

Phase I Getting Students Ready to Learn

Focusing Instruction

Both the teacher's edition and the student's edition should set forth clear purposes for the lesson. Teachers should be instructed to make the purpose for the lesson explicit before each assignment takes place. The student edition should also make clear what students should learn from their reading or upcoming learning activity.

New skills should build on and explicitly relate to previously learned skills and experiences. In the teacher's edition, prerequisite knowledge and skills should appear at the beginning of chapters or units, and texts should note where the previously taught information is located. Teachers should have more guidelines to informally assess students' prerequisite knowledge.

Teachers should be provided with a greater variety of suggestions for highly motivating, hands-on, concrete activities when introducing new material. These "non-reading" activities should more actively involve and prepare students for the material and, as often as possible, help them see how this information relates to the real world.

Activating Prior Knowledge

Teachers' editions, particularly at the secondary level, need to consistently have teachers tap students' prior knowledge in order to relate new information to what students already know. They should sensitize teachers to

listen for students' misconceptions and provide information for clarifying them.

Textbooks should use more metadiscourse or "friendly talk," not only to help activate the reader's prior knowledge, but also to make relationships between concepts more explicit. For example: Most of you have seen lakes and rivers...;" "Look back at the picture on the last page...;" "Have you ever flown in a plane?"

Previewing Concepts, Vocabulary, Text Structure

Teachers' editions should highlight core information, identify major themes, set priorities, and/or guide teachers to make informed decisions about choosing chapters, units, and concepts that provide a logical body of information for students. The students' editions should give students a strategy for previewing the text prior to reading.

Textbooks should highlight important vocabulary words and concepts, help teachers introduce and reinforce them, using examples and non-examples, and relate the new words to students' prior knowledge. Texts should also differentiate between high frequency words and technical vocabulary.

Publishers should improve upon the structure of information in textbooks: headings and subheadings should reflect an accurate, logical organization of subject matter; topic sentences should be obvious; connectives and referents should be clear; and graphic aids, questions, and activities should be designed to help readers organize and manage information. Teachers' editions should provide explicit information about ways teachers can help students learn about textbook structures and features.

Phase II Engaging Students in the Learning Activity

Helping Students Comprehend Information in the Textbook

Textbooks, particularly at the secondary level, should include specific instruction in active reading techniques in both the teachers' edition and the student edition. these include note taking, highlighting or underlining important information, or outlining. There should be explicit instructions for linking old and new information.

Textbooks should encourage teachers to make effective use of graphics, particularly for those children who experience reading problems and who may have difficulty attending to the print when pictures are present.

Teaching Study Strategies

Textbooks should provide explicit information to help teachers teach study skills, such as identifying text structure, chunking, mapping information, using visual imagery, test taking, and assignment completion strategies. Specifically, textbooks should provide models for developing and using effective graphic organizers and show teachers how to help students construct their own graphic organizers.

Providing Experiential Activities

Both science and social studies textbooks should provide suggestions for a wide variety of experiential activities.

Emphasizing Metacognition

Textbooks should instruct teachers and students in a variety of metacognitive skills such as questioning strategies, paraphrasing, and error monitoring. Instruction on when, how, and why to use strategies should be well integrated into the text. Textbooks should include information for teachers about how to help their students monitor and assess their own learning.

Employing Cooperative Learning Strategies

Textbooks should encourage cooperative learning structures at both the elementary and secondary level and during all phases of learning. Activities might include group study, team reading, research, reviewing, reporting, peer teaching, and culminating projects.

Phase III Having Students Demonstrate Competence and Extend Knowledge

Having Numerous Opportunities to Demonstrate Mastery

Textbooks, particularly at the secondary level, should encourage teachers to provide students with many opportunities for active class participation. Textbooks should also encourage teachers to maximize the number of acceptable student responses.

Providing for a Variety of Ways to Demonstrate Competence

Textbook programs, particularly upper elementary and secondary, should provide a variety of activities other than written tests for students to demonstrate their learning. these could include role plays, debates, projects, experiments, and demonstrations.

Extending/Applying Learning

> Textbooks should provide a rich variety of interesting activities that apply and extend new learning into meaningful contexts, suitable for a wide range of learners. They should relate to students' real world and encourage home involvement.

Recommendations for Teachers

It will take time (perhaps many years) before the recommendations to publishers become implemented. In the meantime, teachers need strategies to make existing textbooks more usable. To meet this need, the project developed a set of instructional strategies, based on suggestions offered by teachers (reviewers and verification group) and current research findings.

Examples of strategies are presented in Table 4, categorized under the three phases of learning discussed earlier: getting students ready to learn, engaging students in the learning activity, and having students demonstrate competence and extend knowledge. Some strategies are useful in more than one phase; graphic organizers, for example, can be used to introduce a lesson, serve to guide the student's reading, and to evaluate the student's comprehension. Cooperative learning and hands-on activities can be considered almost a style of teaching rather than a learning strategy; therefore they are listed at the end of the chart.

NATIONAL CONFERENCE ON IMPROVING TEXTBOOK USABILITY

Purpose

In its proposal responding to the Department of Education's RFP, EDC and RMC Research envisioned the Publishers Conference as a "forum where all of the stakeholder groups can come together, reach consensus, and make specific recommendations" to

publishers. However, despite its original title, staff came to think of it less as a publishers' conference and more as a beginning of a national movement involving all of the various groups interested in improving textbook design and use.

The stakeholders represented at the conference included publishers, teachers and school administrators, educational researchers, teacher educators, and representatives from professional organizations, parent organizations, and advocacy groups. All of these stakeholder groups have a role to play, since improving textbooks is a complex, multifaceted task that requires more than simply encouraging publishers to make changes in the books themselves. It also means preparing the textbook marketplace to first request and then accept new ideas incorporated into textbooks, training those people who select textbooks to evaluate them in an informed way, and training teachers to use them effectively.

The conference was structured so that these representatives could learn about the project, become familiar with our findings and recommendations, and then discuss them. We wanted to provide opportunities for participants to share their own ideas and listen to the concerns of others. In addition, the conference provided an opportunity to solicit feedback on the content and structure of the text analysis tool and its potential usefulness.

The goal was for each stakeholder group to devise plans that would eventually result in improved textbooks. These action plans would describe those activities each group might be willing to undertake--researchers would conduct further research on specific textbook features, teacher trainers would include training in textbook use and selection, and publishers and developers would improve textbook design.

The conference was held in February 1988 in Washington, D.C. It successfully brought together representatives of the various constituencies, provided a forum for participants to discuss the usability of textbooks with special learners and the project's recommendations, and laid the groundwork for continued collaboration.

Conference Participants

To ensure that all relevant groups were represented at the conference, EDC and RMC Research developed a select list of invitees. EDC/RMC Research designed a brochure explaining the purpose and content of the conference (See Appendix F for the brochure and Appendix G for letters of invitation). It was sent to invitees, along with letters of invitation which were tailored to each constituency. Their response was immediate and enthusiastic. In fact, the demand was so great it became necessary to increase the number of participants from about 100 to nearly 120. We invited the chief executive officers of all major educational publishing houses and development companies, asking that two decision-makers be selected to represent their organization at the conference. We extended special invitations to the publishers whose books had been analyzed. In all, twenty-two publishers and textbook developers were represented at the conference.

The school administrators and teachers representing both elementary and secondary science and social studies were selected from education professionals with whom EDC and RMC Research had worked in the past, including the teacher-reviewers and selected verification teachers. Together they represented seven states. In addition, there were state adoption and curriculum representatives from nine states, making a total of thirteen different states represented at the conference.

Teacher educators and educational researchers, well-respected authorities, came from thirteen institutions of higher education and seven non-academic institutions, representing an additional nine states. Thirteen professional organizations sent delegates, coming from three additional states and the District of Columbia. Five members from the U.S. Department of Education also attended the two-day conference. In total, twenty-six states plus the District of Columbia were represented.

Content and Process

Because of the importance of the conference, a substantial amount of time was spent in preparing a conference report for participants and planning the agenda. The Conference Report, a document of more than fifty pages, summarized project tasks, presented the text analysis findings by subject area and grade level, and listed recommendations for publishers to consider when designing or revising their textbooks. The appendices included suggestions for teachers to make their current textbooks more accessible to students with learning problems, lists of the textbooks that were analyzed and the names of the teacher-reviewers and verification teachers. The report also provided a bibliography and suggested reading list. We distributed copies of the report to all conference participants and, following the conference, made additional copies available to people unable to attend the conference.

Keeping in mind the purposes of the conference, project staff selected the presentation techniques (e.g., lecture, discussion, panel) that best linked the purpose with the desired results. The first task was the selection of keynote speakers to set the overall tone of the conference. Martin Kaufman, Director of the Division of Innovation and Development in the Office of Special Education Programs, U.S. Department of Education, welcomed participants to the conference and presented the project in the

context of the Department's overall goals. Donna Ogle, Director of the Reading and Language Department at National College of Education in Evanston, Illinois, gave the keynote address, discussing trends in reading research and textbook instruction.

To present an overview of the project, Jean Ciborowski, Project Director, and Lawrence Rayford, Coordinator of Textbook Analysis, briefly described each step in the process leading to the conference, using visual displays and referring to a project summary in the Conference Report. To ensure a common understanding of such terms as "tapping prior knowledge," "integrating information using a variety of graphic organizers," and "accommodating diverse learning styles," Dr. Ciborowski and other speakers involved the audience in a variety of simulations and utilized concrete examples.

Because of the diversity of interests represented by conference participants, it was important to ensure that each understood the driving and restraining forces faced by members of the other groups. For example, educators may expect publishers to change the format of their books simply because researchers have evidence that a particular strategy works. However, understanding the problems publishers face in meeting the requirements established by state adoption committees may mediate teachers' expectations.

Project staff chose a panel discussion as an effective method for surfacing the issues faced by each group. Bonnie Armbruster represented teacher trainers/researchers, Rodger Bybee represented curriculum developers, and Dan Caton represented publishers. Jack Gerlovich, one of the project's advisors, agreed to speak for adoption and state curriculum specialists, and Julia Phelps, one of the project's teacher-reviewers, represented classroom teachers. Finally, we felt it was important for participants to hear what students who experience

problems with textbooks had to say, and selected Gwynneth MacDonald as spokesperson.

To ensure that we addressed all the salient issues, project staff asked panel members to prepare an answer to a specific question sent to them prior to the conference. For example, we asked Bonnie Armbruster, a well-known textbook researcher, why it is important that text structure be explicit. We asked Gwyn MacDonald, a learning disabled student, what text or instructional features posed the greatest obstacle. After giving their prepared answers, panelists then responded to questions from the floor.

Once sensitized to the perspectives of the various stakeholders, we gave all conference participants an opportunity to respond to the findings and recommendations presented in an earlier session. Breaking the large group into small groups created an opportunity for people to interact and respond to the issues raised by the panelists. Grouping people by constituency permitted participants with like interests and concerns to focus on action plans that members of the group might ultimately take to implement the groups' recommendations. Since it was important for publishers to hear all perspectives, publishers were randomly assigned to each of the otherwise homogeneous groups.

Project staff served as discussion leaders. A member of each group served as recorder, reporting action plans to the fully assembled group. Project staff synthesized these reports to identify common themes and presented these findings to the full group on the second day of the conference. While no formal agreement was reached, this synthesis represented the thinking of the conference members. The full conclusions are found on page 36-37 of the Conference Proceedings. In brief, they are to

- improve state and local level textbook adoption processes

- continue the dialogue among various constituents
- promote collaboration of publishers, teachers, and researchers at every stage of development
- rethink relationships between evaluation and effective textbook instruction
- disseminate study findings, conference recommendations, and the text analysis tool
- encourage publishers and developers to implement study findings, possibly beginning with engaging students in the learning activity
- consider a clearinghouse for compiling and disseminating textbook adoption information
- begin a national dialogue on core curriculum concepts/processes
- provide preservice and inservice teacher training on the use of instructional strategies and textbooks

In order to obtain feedback about the value of the text analysis tool, we provided participants with an opportunity to use the tool with portions of chapters from texts used in the study. Because of time constraints, staff selected sample questions from the text analysis form. The large group was divided into five heterogeneous groups to ensure wide participant discussion. Project staff served as facilitators and also reported the findings of the group to the full group at the conclusion of the conference.

Although there was some concern that the reviewed analysis tool could be misused, most agreed that it was potentially very useful and further development should be pursued. One suggestion was to develop separate designs for different subject areas and grade levels. Some participants felt that, since the content of texts is critical to its usability, it must be included in the analysis form in some way. In addition, the tool needs to be verified, and training must be provided to those who use the it.

To encourage interaction among participants, project staff provided many opportunities for participants to share ideas and debate issues. In addition to breaks between sessions, we held an informal reception before dinner on the first day of the conference. Dinner was then followed by a speaker.

Reactions and Recommendations of Conference Participants

While it is difficult to determine reactions to the conference by constituent group since evaluation forms did not require identification either by name or affiliation, the overall feedback from the conference was very positive. Participants verified, in the conference evaluations, concluding discussions, informal comments, and letters to project staff, the importance of involving all the constituencies in the effort to improve textbooks. There was general agreement that, while a good beginning was made, the complex and interrelated issues that textbook reform raises require continued communication and collaboration among groups in order to achieve results. There was also a feeling that future collaborative efforts should include representatives from testing services.

Regarding the study itself, there were some questions about the methodology, focused primarily on the limited number of reviewers, and the qualitative design. A few participants expressed concerns about the actual findings, suggesting that they were premature, too broad, or not scientifically validated. The majority felt that the findings and the Conference Report offered valuable information for textbook design, selection, and use.

When conference participants were divided into homogeneous breakout groups to react to project findings, each group developed a set of action plans, summarized below.

- Professional Groups identified the need for continued dialogue among the various constituencies but wanted greater representation from textbook adopters. They recommended broad-based discussions of curriculum as a first step in moving towards a core curriculum that reduces the number of concepts or facts in a particular content area.

- State Adoption and Curriculum Representatives called for more training for textbook selection committees and for more time to carry out their task. They urged that the selection process be made easier by having a central source for textbook adoption procedures and guidelines and depository for textbooks themselves.

- Teacher Trainers and Researchers wanted to continue their research into the usability of textbooks and effective practices, including measuring outcomes, and to mesh their work with those developing core curriculum principles. They called for improved training for teachers in using textbooks, both on a preservice and inservice level, and improved adoption procedures at both the state and local levels.

- Teachers and School Administrators endorsed the need for curriculum reform, including discussions on core curriculum and better links between curriculum and textbook programs, and for recommendations from publishers on how to work with diverse learners. They want an improved textbook selection process, including ways to make parents and school board members more familiar with the process and criteria.

Analysis of Impact

In the weeks that followed the conference, project staff met to debrief, review and organize our notes, and study the breakout group reports and evaluation forms. This analysis led to the following conclusions about the impact of the conference on those who attended.

Complexity of the Process

Conference participants gained an appreciation of how complex the process of developing, selecting, and using textbooks is and how

changes in one area affect another. For example, a change in the California curriculum framework requires publishers to revise their texts to meet the new requirements. Some changes cannot be implemented successfully until changes in another area are initiated. Reducing the number of concepts in a science curriculum, for example, will require changes in adoption standards and changes in standardized tests before the revisions will gain acceptance. The various constituencies recognized the need to continue to communicate so that interdependent changes can be orchestrated in ways that will promote successful implementation.

Participants recognized that every stakeholder has a role to play in improving textbooks. Those people who came to the conference ready to blame publishers for the current quality of textbooks learned that publishers respond to the demands of the marketplace. For example, specific text features, such as critical thinking questions, are incorporated in textbooks because they appear as a criterion in large adoption states. Other features such as study strategies may not appear because the market has not yet applied sufficient pressure on publishers to meet this need.

Change Takes Time

The conference also made clear that real change will take time--time to continue the dialogue, time to research the options, time to build consensus, time to decide what changes will benefit the greatest number, time to lay the necessary groundwork to ensure success, time to implement changes. With increased understanding of the forces that drive each constituency, the seeds of textbook reform are being planted on fertile ground and new ideas are beginning to take root.

Close Scrutiny Gave Rise to Dissatisfaction

Many teachers who came to the conference satisfied with the textbooks they currently use found them inadequate after examining the books in detail using the analysis tool. Publishers read sections of their own and others' books and were not entirely satisfied with how the instructional strategies were woven into the teachers' editions. Teacher educators realized how important it was for their teacher-trainees to have instruction in selecting and using textbooks effectively. Members of adoption committees found that some of the guides they were using did not delve as deeply into instructional matters as they would like. They expressed interest in further refinement of the analysis tool, followed by widespread training and dissemination.

Value of the Analysis Tool

The conference verified that educators can be trained to assess textbooks in a systematic way and that the analysis tool can be very useful in that process since it forces the user to look closely at the instructional process. We also learned that it is necessary to look at content as well; that instructional design and content work together to make a textbook both usable and relevant.

Meeting the Needs of Special Education Students

The conference also raised important questions about what constitutes effective instruction for regular and special education. It increased participants' awareness of the large number of students who experience difficulty when they use textbooks and the lack of meaningful guidance for teachers who work with such students using most existing textbooks. While educational researchers have conducted a number of studies that

demonstrate the value of specific learning strategies, this research needs to be translated into classroom instruction by incorporating the research into textbooks and teacher training.

RECOMMENDATIONS FOR FURTHER WORK

The Office of Special Education Programs challenged EDC and RMC Research to gather information about the usability of textbooks, draw conclusions and recommend changes, and promote collaboration among those in a position to use the information to develop improved textbooks to meet the needs of diverse learners. One outcome of conducting this important study has been to identify ways for the important work of this project to continue.

To make real changes in textbooks that incorporate effective instructional features requires the collaboration and communication of all stakeholders. Researchers, publishers, teachers, members of adoption committees, and those in professional organizations must be open to learning about what others are doing and willing to share their own findings.

To keep the momentum going, it is imperative that activities, initiated by this project or suggested by conference participants, should be continued. We believe the synergy at the Improving Textbooks Conference in Washington can be maintained by holding similar forums on a regular basis. Agendas could include results of the latest research, strategies for teachers, and opportunities to debate issues and exchange points of view.

Conference participants recommended that work on the text analysis tool continue by expanding and refining it further and then testing it in controlled situations. It can be refined by making it content- or age-specific, and expanded by incorporating content analysis. Further research can also focus on how it might best be disseminated and what type of training is needed by its users. If test results prove the tool to be a valuable resource, there could be regional training centers or regional training conferences so its use becomes widespread.

Building on one of the suggestions made by conference participants, a regional textbook adoption clearinghouse could serve several purposes. Such a center could house examples of textbooks for visitors to review, and materials about adoption procedures. It could conduct research on the impact of adoption standards on the quality of textbooks; it could hold conferences; and it could provide training for those charged with making textbook selections or lobbying for change.

Change is a process that can be stimulated by people and events. The goal of the Textbook Usability Project was to stimulate change in the development of textbooks so they would incorporate effective instructional strategies to meet the needs of diverse learners in mainstream classes. Through our literature review, we synthesized the research on learner characteristics and effective strategies; through our research efforts, we intensely analyzed textbooks, and through our national conference we brought diverse groups of people together to hear and discuss our findings and recommendations. EDC and RMC Research believes the project achieved its goal: publishers, educators, textbook adopters, teacher trainers, researchers, and parents raised and addressed critical issues about effective instruction derived from our work; we created a forum where people recognized that it would take effort on everyone's part to achieve the kinds of changes that could benefit students; and we facilitated the process by which they began to lay action plans.

This beginning is excellent. However, sowing the seeds of change is one thing, nurturing them to ensure growth is another matter. Since the conference, we have received numerous requests for our Conference Report and other information on textbook usability. Thus, the findings and recommendations from the project are beginning to find their way into the educational, publishing, and research communities and are now a part of an ongoing dialogue. We are hopeful that this dialogue will ultimately lead to real

change in the development of textbooks, in textbook adoptions, and in classroom practice.

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APPENDIX A

TEXT ANALYSIS FORMS

Use This Form for Examining Teacher Editions

INSTRUCTIONAL STRATEGIES

Publisher: _____

Title of Textbook Series: _____

Title of Textbook: _____

Level of Textbook: _____

Appropriate for Grade(s): _____

Copyright Date(s): _____

Analysis Completed By: _____

Improving Textbook Programs For Mainstreamed Diverse Learners

INSTRUCTIONAL STRATEGIES REVIEW FORM

I. GETTING STUDENTS READY TO LEARN

1. Instructional Grouping

1.1 Does the TE recommend that children be grouped during this lesson? Y N U

If yes, then:
1.1a About what size groups are recommended? _____

1.1b Does the TE recommend that children be grouped based on ability? Y N U

What recommendations are made for ability grouping?

_____

_____

1.1c Are groups competitive or cooperative in nature? Comp. Coop. U

1.2 Is peer tutoring recommended? Y N U

1.3 Are any provisions indicated for grouping special needs students when teaching this lesson? Y N U

Please describe these provisions, and comment on their appropriateness:

_____

_____

_____

2. Focusing Instruction

2.1 Does the TE list instructional objectives? Y N U

2.1a Are these objectives clearly stated? Y N U

2.1b Are these objectives tied directly to parts of the text? That is, when you examine a portion of the text, is it apparent which objective the text is dealing with? Y N U

2.2 Does the TE provide an explicit overview of the structure of the lesson? That is, does it indicate to the teacher what should be covered first, what should be covered second, etc? Y N U

2.3 Does the TE explain what is absolutely essential for students to learn during the lesson? That is, does the TE mention the "most important things to cover in this lesson?" Y N U

2.4 Are any provisions indicated for adapting the **content** of the lesson to special needs students? Y N U

2.5 Are any provisions indicated for adapting the **difficulty level** of the lesson to special needs students? Y N U

2.6 Are any other provisions indicated for focusing instruction more effectively with special needs students? Y N U

Please describe these provisions, and comment on their appropriateness:

_____

_____

_____

3. Tapping Prior Knowledge

3.1 Activating Prior Knowledge

3.1a Does the TE list prerequisite skills? Y N U

3.1a.1 Is advice given for helping students overcome their prerequisite skill deficits? Y N U

3.1b Does the TE describe prerequisite knowledge? Y N U

3.1b.1 Is advice given for helping students overcome their prerequisite knowledge deficits? Y N U

3.1c Does the TE provide specific ideas for tapping students' prior knowledge? Y N U

If yes, what suggestions are provided?

3.1c.1 Using analogies? Y N U

3.1c.2 Using "friendly talk?" Y N U

3.1c.3 Using oral questioning strategies that build on students' experiences and prior knowledge? Y N U

3.1c.4 Other strategies described: _____

_____

3.1d Are writing activities provided as a means to activate students' prior knowledge? Y N U

3.1e Are guided discussion activities described as a way to activate students' prior knowledge? Y N U

3.1f Are any provisions indicated for tapping prior knowledge more effectively with special needs students? Y N U

Describe these provisions, and comment on their appropriateness:

_____

_____

_____

3.2 Relating Prior Knowledge

3.2a Does the TE seem to build upon previous lessons in order to accomplish the goals of this lesson? Y N U

If yes, how is this accomplished?

3.2a.1 Are students directed to compare and/or contrast information in order to relate what they know to new informaton? Y N U

3.2a.2 Are students directed to classify information in order to relate what they know to new information? Y N U

3.2a.3 Are students encouraged to use specific strategies for organizing what they already know in order to better understand new information? Y N U

If yes, what strategies are described?

3.2a.3a Strategies for sequencing events, relationships, and other information related to time? Y N U

3.2a.3b Strategies that establish main idea and details relationships? Y N U

3.2a.3c Strategies that look for cause and effect relationships? Y N U

3.2a.3d Strategies that explicitly use graphic organizers presented in the text? Y N U

3.2a.3e Other strategies: _____

_____

3.2b Does the TE provide directions to the teacher to **visually** present information in order to activate or relate students' prior knowledge? Y N U

If yes, do they include:

3.2b.1 Demonstrations? Y N U

3.2b.2 Simulations? Y N U

3.2b.3 Hands-on activities? Y N U

3.2b.4 The use of graphics (maps, charts, pictures, etc.)? Y N U

3.2b.5 Other visual activities: _____

_____

3.2c Are any provisions indicated for getting special needs to relate their prior knowledge more effectively? Y N U

Describe these provisions, and comment on their appropriateness:

_____

_____

_____

3.3 Previewing the Text

3.3a Does the TE have students preview text? Y N U

If yes, how?

3.3a.1 By having students skim the text and identify any unknown words (not necessarily just new vocabulary words)? Y N U

3.3a.2 By directing students to examine pictures in order to predict passage content? Y N U

3.3a.3 By reviewing certain text features (bold face type, italics, headings, etc.) in order to familiarize them with the structure of new text? Y N U

3.3a.4 By examining graphic organizers (timelines, graphs, tables, other visual representations) in order to reduce possible confusion when they read the new text independently? Y N U

3.3a.5 What other strategies are used to preview text? _____

_____

_____

3.3b Does the TE describe specific story/content prediction strategies for previewing text with students (i.e., "What do you think this story is going to be about?")? Y N U

If yes, then:

3.3b.1 Is this handled primarily through oral discussion? Y N U

3.3b.2 Are these prediction strategies linked at all to writing activities? Y N U

3.3b.3 Are visuals (maps, charts, diagrams, etc.) presented to students which help stimulate their thinking about certain things they will encounter in the text? Y N U

3.3b.4 Other strategies used for predicting content: _____

_____

3.3c Does the TE direct the teacher to identify students' possible misconceptions prior to independent reading? Y N U

3.3d Does the TE instruct teachers to introduce content by discussing relevant non-reading experiences? Y N U

3.3e Does the TE set purposes for reading? Y N U

If yes, please describe how this is accomplished: _____

_____

_____

3.3f Does the TE encourage teachers to use a "map" or "network" which shows, in a concrete fashion, the relationships among ideas and concepts to be presented in the text? Y N U

3.3g Is vocabulary introduced as a way to stimulate students' thinking about new information? Y N U

If yes, how is this accomplished?

3.3g.1 Are teachers instructed to say the vocabulary words aloud so students know their correct pronunciations? Y N U

3.3g.2 Are new vocabulary words introduced in context or in isolation? Con Iso U

If introduced in context, describe how this is acomplished (oral sentence reading by teacher; sentences written on the board and read aloud by students; etc.):

_____

_____

3.3g.3 Is the teacher advised to relate new vocabulary to other words students were previously taught? Y N U

3.3g.4 Are teachers encouraged to use specific examples when defining/using new vocabulary? Y N U

3.3g.5 Are teachers encouraged to use "non-examples" when teaching new vocabulary? Y N U

3.3g.6 Are teachers alerted to words likely to present problems for students (pronunciation, decoding, conceptual problems, etc.)? Y N U

3.3g.7 Does the TE instruct teachers to tap students' prior knowledge when introducing new vocabulary? Y N U

3.3g.8 Now look over the text containing the new vocabulary. Do you think that all the words that might cause students problems were included in the pre-reading vocabulary instruction activities? Y N U

3.3h Does the TE encourage teachers to minimize difficulties stemming from dialect differences by reading aloud in order to give readers a better "feel" for the language? Y N U

3.3i Are any provisions indicated for previewing text more effectively with special needs students? Y N U

Describe these provisions, and comment on their appropriateness:

_____

_____

_____

OVERALL APPRAISAL OF PART I: GETTING STUDENTS READY TO LEARN

Please provide a brief commentary about the pre-instructional activities outlined in the TE for this lesson/chapter. In particular, describe the principal **strengths and weaknesses** of this lesson in terms of its adequacy for "getting students ready to learn."

Concentrate on addressing: (1) The adequacy of this lesson/chapter for use with mainstreamed diverse learners; and
(2) Your recommendations for how this lesson/chapter could be improved for use with mainstreamed diverse learners.

II. DURING INSTRUCTION

4. Presenting New Information

4.1 Learning Through Reading

4.1a Do reading assignments seem to be of an appropriate length for use with special needs students? Y N U

4.1b Do the reading assignments seem to be structured adequately for use with special needs students? Y N U

4.1c Do the instructional activities related to using the text seem to be highly motivating? Y N Y

4.1d Are there any guidelines to assist the teacher in making assignments clearer for special needs students? Y N U

What do the guidelines suggest?: _____

_____

_____

4.1e Does the TE suggest that additional reading time be allowed for students with reading problems? Y N U

4.1f How are the key text-based activities conducted?
Please check all that apply in each category:

Reading:
___ Independent, in-class, sustained silent reading
___ Independent, take-home, sustained silent reading
___ Guided silent reading (occasional interruptions)
___ Group oral reading (whole class or groups)
___ Independent oral reading ("round-robin")
___ Teacher reads aloud (students follow along)
___ Other (please describe): _____

Questioning:
___ Teacher's oral questions with students' oral responses
___ Teacher's oral questions with students' written responses
___ Students complete written questions with written responses
___ Other (please describe): _____

Grouping:
___ Whole class (no grouping)
___ Small groups
___ Peer tutoring
___ Independent
___ Other (please describe): _____

4.1g Does the TE provide instructional advice/techniques for teaching students to better comprehend text? Y N U

If yes, what advice/techniques are covered?

4.1g.1 Prediction/confirmation strategies? Y N U

4.1g.2 Decoding strategies? Y N U

4.1g.3 Word identification strategies? Y N U

4.1g.4 Strategies for using context clues? Y N U

4.1g.5 Organizing information into main ideas and details? Y N U

4.1g.6 Sequencing? Y N U

4.1g.7 Integrating text with graphics in order to interpret meanings and relationships? Y N U

4.1g.8 Other advice/techniques covered in the TE which help students comprehend text: _____

_____

_____

4.1h Does the TE encourage teachers to reinforce students' correct and/or appropriate responses? Y N U

4.1i Does the TE encourage teachers to repeat students' correct and/or appropriate responses? Y N U

4.2 Learning Through Non-Reading Activities

4.2a Do non-reading activities seem to be of an appropriate length for use with special needs students? Y N U

4.2b Do non-reading activities seem to be structured adequately for use with special needs students? Y N U

4.2c Is there sufficient opportunity for students to learn through guided exploration activities (i.e., hands-on activities, field trips, discussions, etc.)? Y N U

4.2d Do non-reading assignments seem to be highly motivating? Y N U

4.2e Do directions appear to be too complex for special needs students? Y N U

4.2f Are there any guidelines to assist the teacher in making assignments clearer for special needs students? Y N U

What do the guidelines suggest?: _____

_____

_____

4.2g Does the TE suggest that additional time for completing non-reading assignments be provided to special needs students? Y N U

4.2h Does the TE encourage the use of a variety of materials and/or resources (games, classroom visitors, field trips)? Y N U

4.2i Does the TE encourage the use of audio-visual materials? Y N U

Does the TE encourage "hands-on" activities for learning new material? Y N U

4.2j Does the TE encourage experiential approaches to conveying the content of this lesson/chapter? Y N U

4.2k Does the TE encourage multi-sensory/multi-modal approaches when conveying the content of this lesson/chapter? Y N U

4.2l Does the TE indicate special provisions for adapting various non-reading activities for use with special needs students? Y N U

Describe these provisions, and comment on their appropriateness:

_____

_____

_____

5. Organizing, Retrieving, and Integrating New Information

5.1 Does the TE encourage teachers to maximize the number of possible students' responses/approaches? In other words, is the general approach of "more than one correct answer or approach" seem to be recommended? Y N U

5.2 Does the TE recommend that study strategies be taught as a means for students to become more effective learners? Y N U

If yes, then check those discussed in this lesson:

___ Outlining srategies
___ Note-taking strategies
___ Skimming and scanning strategies
___ Strategies for adjusting reading rate
___ Strategies for using graphics (maps, charts, etc.)
___ Classifying strategies
___ Compare/contrast strategies
___ Recitation strategies (including self-talk and verbal rehearsal)
___ Mnemonics strategies
___ Visual imagery strategies
___ Self-questioning strategies
___ Other strategies mentioned: _____

5.3 Are any provisions indicated that make organizing, retrieving, and integrating activities more appropriate for use with special needs students? Y N U

Please describe these provisions, and comment on their appropriateness:

_____

_____

_____

6. Monitoring Learning

6.1 Are strategies described which help students monitor their own learning? Y N U

If yes, which strategies are covered?
Please check all that are mentioned:

___ Re-reading strategies
___ Chunking strategies
___ Self-questioning strategies

___ Paraphrasing strategies
___ Error monitoring strategies
___ Study habit monitoring strategies
___ Other strategies described which help students monitor their learning:

_____

6.1a Are any provisions indicated for teaching self-monitoring strategies more effectively to special needs students? Y N U

Describe these provisions, and comment on their appropriateness:

_____

_____

_____

6.2 What kinds of activities are teachers encouraged to use to monitor student learning during this lesson?

Does the TE:

6.2a Direct teachers to ask questions that show students understand relationships? Y N U

6.2b Direct teachers to ask questions which require students to classify relationships? Y N U

6.2c Direct teachers to ask questions which require students to repeat facts, figures, etc. (literal level)? Y N U

6.2d Does the TE direct teachers to ask questions which require students to make inferences? Y N U

6.2e Does the TE provide specific advice/techniques to increase students' critical thinking abilities? Y N U

6.2f Other activities or strategies mentioned that can be used to monitor students' learning: _____

_____

6.2g Are any provisions indicated for monitoring special needs students' learning? Y N U

Describe these provisions, and comment on their appropriateness:

_____

_____

_____

OVERALL APPRAISAL OF PART II: DURING INSTRUCTION

Please provide a brief commentary on the instructional activities outlined for this particular lesson/chapter. In particular, describe the principal **strengths and weaknesses** of the teacher's edition in terms of its adequacy as an instructional tool.

Concentrate on addressing: (1) The adequacy of this lesson/chapter for use with mainstreamed diverse learners; and
(2) Your recommendations for how this lesson/chapter could be improved for use with mainstreamed diverse learners.

III. FOLLOWING INSTRUCTION

7. Attaining Competence (Skill/Knowledge Reinforcement Activities)

7.1 Are there practice/reinforcement activities accompanying this lesson? Y N U

7.2 Does the TE provide teachers with suggestions for making smooth transitions from instructional to reinforcement activities? Y N U

7.3 Are any provisions indicated for reducing the complexity of verbal or written instructions accompanying practice activities? Y N U

7.4 Does there seem to be ample opportunity for students to practice new skills or reinforce new information? Y N U

7.5 Do the practice activities build upon the most important concepts covered in the lesson? Y N U

7.6 Does there appear to be an adequate variety of reinforcement activities? Y N U

7.7 Do the practice activities seem to be highly motivating? Y N U

7.8 Are hands-on approaches encouraged to reinforce skills, knowledge, or concept development? Y N U

7.9 Are teachers encouraged to relate practice activities to the context of the "real world?" That is, is there a degree of relevance among the activities to students' every day lives? Y N U

7.10 Does the TE encourage teachers to form cooperative rather than competitive task structures during reinforcement activities? Y N U

7.11 Does the TE encourage teachers to maximize the number of possible student responses on a given task? Y N U

7.12 Does the TE instruct teachers to question students in order to help them determine whether questions are fact, inference, or opinion? Y N U

7.13 Does the TE encourage teachers to verbally reinforce students' appropriate behavior/responses specifically and descriptively? Y N U

7.14 Does the TE instruct teachers to demonstrate self-questioning strategies which help students paraphrase or "chunk" information so they can learn it more efficiently? Y N U

7.15 Does the TE instruct teachers to model error-monitoring strategies? Y N U

7.16 Does the TE instruct teachers to model writing strategies? Y N U

7.17 Are students asked to design "maps" or "networks" which graphically depict the interrelationship between text content and text structure? Y N U

7.18 Does the TE instruct teachers to construct a chapter/lesson "frame" that students must complete by filling in sentences and phrases? Y N U

7.19 Does the TE instruct teachers to demonstrate mnemonics strategies in order to help students **retain** information? Y N U

7.20 Does the TE provide teachers with suggestions for dealing with behavior problems during the lesson? Y N U

7.21 Are any provisions indicated for adapting reinforcement activities to the needs of special learners? Y N U

Please describe these provisions, and comment on their appropriateness:

_____

_____

8. Demonstrating Competence (Evaluation Activities)

8.1 Are there evaluation/demonstration activities accompanying this lesson? That is, are there activities described that are used specifically to determine students' competence? Y N U

8.2 Are any provisions indicated for reducing the complexity of verbal or written instructions accompanying evaluation/demonstration activities? Y N U

8.3 Does there appear to be an adequate variety of evaluation/demonstration activities to accommodate students' various learning styles and abilities? Y N U

8.4 Does the TE encourage hands-on approaches for students to use when they demonstrate skills or knowledge? Y N U

8.5 Please provide a general overview of the principal procedures outlined in the TE for having students demonstrate their competence:

Please check all that apply:
___ Teacher questions students orally in a whole class setting
___ Teacher questions students orally in small groups
___ Students are organized into groups, then "report back" to whole class
___ Individual students read aloud, without questions asked by the teacher
___ Individual students read aloud, with questions asked by the teacher
___ Students individually complete pages prepared by the publisher
___ Students individually complete pages prepared by the teacher
___ Students physically demonstrate their competence (i.e., an experiment)
___ Students give individual oral presentations
___ Students give group presentations
___ Students write paragraphs, themes, reports, etc.
___ Other ways students demonstrate competence: _____

_____

_____

8.6 Does the TE indicate that teachers should teach test-taking skills? Y N U

If yes, what skills are covered?
Please check all that are mentioned:
___ Reasoning strategies specific to test-taking situations
___ Ways to help students evaluate, or "double-check" their test answers
___ Ways to distinguish between literal, inferential, and evaluative test questions
___ Practice in answering inferential test questions
___ Ways to improve students' existing test-taking skills
___ Relaxation strategies
___ Other test-taking skills mentioned in the TE: _____

_____

8.7 Are there any provisions indicated for adapting test-taking skills instruction to the needs of special learners? Y N U

Please describe these provisions: _____

_____

8.8 In general, are there any provisions for adapting evaluation or demonstration activities, or other activities designed to determine students' competence, for use with special needs students? Y N U

Please describe these provisions, and comment on their appropriateness:

_____

_____

_____

9. Extending Skills/Knowledge (Extension/Enrichment Activities)

9.1 Does the TE describe any "extension" or "enrichment" activities? Y N U

9.2 Does the TE provide a variety of alternatives for students to extend their knowledge or skills to new contexts through the enrichment activities? Y N U

9.3 Do the enrichment activities accompanying this lesson seem to be directly related to its focus of instruction? Y N U

9.4 Does the TE give direction in how students can transfer newly learned information to new settings? How to transfer learning from one situation to another? Y N U

9.5 Do the enrichment activities seem to be generally valuable for use with special needs students? Y N U

9.5a If yes, do you think they need to be adapted for use with these students? Y N U

9.5b Are any guidelines given for adapting enrichment activities for use with special needs students? Y N U

9.5c If you feel the activities are not valuable for this population, please comment on any of their specific shortcomings:

_____

_____

_____

9.6 Do the enrichment activities seem to encourage creativity? Y N U

9.7 Do the suggestions for enrichment include "hands-on" activities? Y N U

9.8 Do the suggestions for enrichment encourage multi-sensory, multi-modal activities? Y N U

9.9 Do the enrichment activities seem to be related to children's every day experiences? Y N U

9.10 Are the enrichment activities motivational and potentially interesting to students in general? Y N U

9.11 Are there any provisions indicated for adapting the enrichment activities to meet the needs of special learners? Y N U

Please describe these provisions, and comment on their appropriateness:

_____

_____

_____

OVERALL APPRAISAL OF PART III: FOLLOWING INSTRUCTION

Please provide a brief commentary on the nature of the post-instructional activities outlined in the TE for this lesson/chapter. In particular, describe the principal **strengths and weaknesses** of the teacher's edition in terms of its adequacy as a resource for conducting post-instructional activities.

Concentrate on addressing: (1) The adequacy of this lesson/chapter for use with mainstreamed diverse learners; and
(2) Your recommendations for how this lesson/chapter could be improved for use with mainstreamed diverse learners.

88

Use This Form for Examining All Materials Students Use

INSTRUCTIONAL MATERIALS

Publisher: _____

Title of Textbook Series: _____

Title of Textbook: _____

Level of Textbook: _____

Appropriate for Grade(s): _____

Copyright Date(s): _____

Analysis Completed By: _____

Circle One:

Workbook Copy Masters Tests Lab Book Other: _____

INSTRUCTIONAL MATERIALS REVIEW FORM

10. Appearance and Appeal of Instructional Materials

10.1 Does the publisher make adequate use of headings, subheadings, and other devices to organize information? Y N U

10.2 Does the publisher employ a system for consistently highlighting important concepts or bits of information? Y N U

10.2a How is this highlighting accomplished (i.e., use of italics, bold facing on important sentences, "windows" in the margins which list important facts, arrows pointing to key names or dates, etc.)?:

_____

_____

_____

10.3 Do the materials seem to "talk to" rather than "talk at" the reader? That is, are the materials personalized rather than merely informational? Y N U

10.4 Do you believe the layout and design is visually appealing to students? Y N U

10.4a If not, what do you think the publisher could do to make the layout and design more appealing?

_____

_____

_____

10.5 Are students provided with adequate opportunity to reinforce new learning through concrete applications? Y N U

10.6 Are a variety of hands-on/experiential activities (experiments, demonstrations, etc.) outlined in the materials? Y N U

10.7 Do materials encourage the use of a wide variety of instructional media (films, newspapers, interactive technology,, etc.)? Y N U

10.8 Do you believe the information presented in the materials is highly motivating for most students who use it? Y N U

10.9 Do you believe special needs students would find the materials interesting and enjoyable to use? Y N U

10.9a If not, what would you recommend be done to improve their general interest level?

_____

_____

_____

10.10 Are "take-home" activities included in the materials accompanying this lesson? Not necessarily just workbook pages that can be completed at home, but activities that are structured for beyond-the-classrom contexts. Y N U

10.11 Are parents encouraged to become involved in their child's non-classroom activities? Y N U

10.12 Are any provisions indicated for adapting the appearance and/or appeal of the instructional materials for use with mainstreamed diverse learners? Y N U

Please describe these provisions, and comment on their appropriateness:

_____

_____

_____

11. Text Structure

11.1 Do sentences appear to be overly complex? Y N U

11.2 Are there clear pronoun referents? Y N U

11.3 Are there clear connectives? Y N U

11.4 Is there an apparent attempt to use practical rather than technical terminology? Y N U

11.5 Are newly and previously used terms repeated in slightly different but reinforcing modes? Y N U

11.6 Does the text seem to be written at a reading level that is appropriate for the students with whom it is intended to be used? Y N U

11.7 Does the text seem to be written at an appropriate reading level? Y N U

11.8 Are the materials and activities free from irrelevant and distracting information? Y N U

11.9 Are the materials and activities structured in a logical, systematic fashion (i.e., chronological order, hierarchical order, topical, etc.)? Y N U

11.10 Do the materials or activities seem overloaded with new concepts and information? That is, for this lesson, does it appear that too much new information is presented? Y N U

11.11 Do materials and activities seem to encourage logical concept development (i.e., from the simplest to most complex? From the concrete to the abstract? From literal to inferential)? Y N U

11.12 Do materials and/or activities seem to encourage concept development in small, discrete units that build on and reinforce one another? Y N U

11.13 Does there appear to be a strong link between the material covered in instruction and the material contained in reinforcement activities (workbooks, labs, enrichment books, etc.)? Y N U

11.14 Does there appear to be a strong link between the material contained in the reinforcement activities and the material covered by the tests? Y N U

11.15 Are any provisions indicated for adapting the structure of the instructional materials for use with special needs students? Y N U

Please describe these provisions and comment on their appropriateness:

_____

_____

_____

12. Materials Usability

12.1 Do the workbook pages and tests which students use include written directions? Y N U

12.1a If yes, do written directions seem clear and easy to follow? Y N U

12.1b If yes, do written directions seem appropriate for use with special needs students? Y N U

12.2 Do visuals, which **present** new information to students, accompany this lesson (pictures, diagrams, charts, etc.)?

12.3 Do graphic organizers, which **structure** information for students, accompany this lesson (i.e., semantic maps, concept networks, idea trees, etc.)? Y N U

12.4 Are the visuals and graphic organizers functional, useful, and interesting?

12.5 Are there introductory statements, or paragraphs, which review previously studied material? That is, are students somehow alerted to prerequisite skills or knowledge? Y N U

12.6 Are there introductory statements, or paragraphs, which provide an overview of upcoming content? That is, are purposes set in order to guide students' new learning? Y N U

12.7 Are there summary statements which highlight key points? Y N U

12.8 Are definitions and notes used to clarify subtle or potentially confusing points? Y N U

12.9 Are text sections that are only slightly related to the focus of instruction "set aside" in footnotes, appendices, or margins? Y N U

12.10 Do the materials advocate the use of text features such as the table of contents, glossary, or index? Y N U

12.11 Do the materials advocate the use of reference sources such as encyclopedias and dictionaries? Y N U

12.12 Are any provisions indicated for adapting the general usability of the text for more effective use with special needs students? Y N U

Please describe these provisions and comment on their appropriateness:

_____

_____

_____

Improving Textbook Programs For Mainstreamed Diverse Learners

Use This Form for Commenting on the Adequacy of the Instructional Series

OVERALL APPRAISAL FORM

Publisher: _____

Title of Textbook Series: _____

Title of Textbook: _____

Level of Textbook: _____

Appropriate for Grade(s): _____

Copyright Date(s): _____

Analysis Completed By: _____

FORM 2.27 - 3a

The following six questions provide an opportunity for you to comment on what you believe are the principal strengths and weaknesses of each textbook program you examined using the detailed review forms. For each question, please address the issues and concerns you believe are central to improving the overall quality of each publisher's products. Please do not feel that the scope or breadth of your responses are limited to any particular page length.

Please keep in mind that the focus of your commentary should be on improving the usability of textbook programs for mainstreamed diverse learners.

Question 1: In general, are the key concepts and information presented to students in this program simplified enough for them to understand? In instances in which difficult concepts are dealt with, is there adequate guidance (either through instruction or in the textbook itself) to make sure students understand? What, if anything, can be done to improve the way in which new information is presented?

Question 2: Is instruction amply motivating? That is, are enough fun, interesting, and "real world" activities included in instruction to make students eager to learn? Are these activities also motivating for mainstreamed diverse learners? What, if anything, do you believe can be done to make learning more exciting for students who use this instructional program?

Question 3: How adequate is this instructional program for helping students learn to structure ideas, concepts, and new information in order to be better learners? For example, consider such aspects as its adequacy for teaching study skills, active reading strategies, and test-taking skills. What can be done to improve the instructional program in this regard?

Question 4: How adequate is this instructional program for providing teachers with strategies, techniques, or advice for identifying students who have trouble learning new information or mastering new skills? How appropriate are the strategies for adapting materials or instruction to the needs of mainstreamed diverse learners? In general, how could the program be improved in the areas of identifying learning difficulties and alleviating their existence?

Question 5: In general, what are the most significant improvements you believe are necessary in order to make the instructional <u>materials</u> comprising this textbook program more appropriate for use with mainstreamed diverse learners?

Question 6: In general, what are the most significant improvements you believe are necessary in order to make the instructional strategies described in this textbook program more appropriate for use with mainstreamed diverse learners?

APPENDIX B

RESOURCE PACKET

TEXTBOOK ANALYSIS
REFERENCE BOOK

IMPROVING TEXTBOOK PROGRAMS
FOR MAINSTREAM DIVERSE LEARNERS

GLOSSARY

ACTIVE READING

Interacting with the text; for example, underlining main ideas, numbering, circling unknown words, paraphrasing or chunking information

ANCILLARY INFORMATION

Ideas that do not contribute to the main idea of the text but may add interest or authenticity, describe people or events that supplement the text, or refer to skills. Research suggests that ancillary material is most useful when it is set apart from the main text so that it does not interrupt the flow.

CHUNKING

Organizing information by grouping

COHERENCE

Systematic connections; in coherent texts, ideas are woven together smoothly, flow logically between sentences, paragraphs, and chapters; concepts are presented in some logical order, e.g., from simple to complex or chronologically

CONSIDERATE TEXT

Text that is written with the reader in mind, so that language and concepts are appropriate, structure is clear, prior knowledge is activated, etc.

COOPERATIVE LEARNING (as contrasted with competitive learning)

Groups of students working together toward a common goal, free of competition and the pressure of time

ERROR MONITORING

Strategies that help students learn how to detect and correct errors

GRAPHIC ORGANIZERS

A wide variety of techniques that help students comprehend new informaiton by structuring it in visual ways, such as mapping, charts, diagrams, networks (See reference guide)

ADVANCED ORGANIZERS

Graphic organizers that are given to students prior to instruction; they may be completed while the teacher introduces the lesson or by the student before or during the lesson

GUIDED READING

Directed reading; for example, reading to find answers to questions asked by the teacher, offset in the text, or at the end of sections; completing graphic organizers or completing steps in an experiment

METADISCOURSE

"Talking" to the reader in a personalized way, using personal pronouns and directing questions or statements to the student

MISCONCEPTIONS

Information that is misunderstood or interpreted inccorrectly. Research reveals that students maintain strong commitment to their misconceptions so teachers need to identify and try to alter them

MNEMONICS

Strategies that help students remember information, such as rhymes (Thirty days hath September...), visual imaging, acronyms

PARAPHRASING STRATEGY

Stopping periodically at selected points in the text to paraphrase verbally or in writing

PEER TUTORING

Matching mainstreamed students with normally achieving classmates for tutoring or other kinds of interactions

PREREQUISITE KNOWLEDGE

Information that students must have to understand the new lesson; previously learned information that is the foundation for the new learning

PREREQUISITE SKILLS

Skills students need in order to move on to the next level; it is assumed that students have already learned these skills

SELF QUESTIONING

A monitoring strategy for students in which they ask themselves questions in order to formulate or search for answers or to see how well they understand the new information

SETTING THE PURPOSE

Giving the reason or the objective of the activity

SPECIAL NEEDS STUDENTS - MAINSTREAMED DIVERSE LEARNERS

Students requiring an Individual Education Plan (IEP), including, for purposes of this project, the learning disabled, emotionally disturbed, mildly mentally retarded, visually impaired, and hearing impaired

STRUCTURE

Pattern of organization; text that is well structured has a logical organization of information; the organization is reflected in titles, headings, and subheadings, introductory paragraphs that preview the information to come, etc. Research reports that when students are taught the structure, they are better able to learn.

TAPPING PRIOR KNOWLEDGE, ACTIVATING PRIOR KNOWLEDGE

Research suggests that successful learners integrate or relate new information to knowledge they already have. To help students learn, teachers must call forth what students already know and understand.

RELATING PRIOR KNOWLEDGE

Once teachers have activated students' prior knowledge, they must help students relate that knowledge to the new information they will learn

VISUAL IMAGING

A technique that helps students remember information by forming mental images of people, places, things, ideas, or events described in the text

FOCUS ON Skills

Chapter Preview

The purpose of previewing a chapter is to try to see what you will be studying. In other words, you are trying to determine what you will be learning before you actually begin to study. A preview is like a band rehearsal or a hockey practice. Students who participate in music or sports must practice their skills in order to perform to the best of their abilities at "show time" or during a game. How does previewing a chapter help you to perform better? Basically, the preview prepares you to think effectively about the new material. Just as an athlete warms-up his or her muscles before a game, your brain needs to be "warmed-up" before you study.

You will be using three techniques for your chapter preview. The first is to determine the scope and organization of the information in the chapter. Secondly, you will be focusing on key words. Finally, you must determine the purpose of the chapter.

Scope and Organization

1. Look at the chapter title. Think of several questions you have about Earth and the moon that may be answered.
2. Look at the section titles. These titles are the authors' outline and show how the information is divided into subjects. The following list shows the type of information that follows the first three section titles in Chapter 4. After reading this list, write a statement about the information that follows the remaining section titles.
   a. (Section 4:1) Real motion helped scientists realize Earth's position in the universe.
   b. (Section 4:2) Gravity and inertia cause the planets to move and follow specific paths.
   c. (Section 4:3) Earth's tilt and the angle of the sun's rays cause the seasons.
3. Look at the *Summary* at the end of the chapter. Important ideas are listed here. Reading these statements tells you the main ideas that will be discussed in the chapter.
4. Quickly glance at the illustrations shown throughout the chapter. These illustrations suggest ideas about the information to be studied. Pictures also support the main ideas by providing examples.

New Vocabulary

1. Look at the *Vocabulary* at the end of the chapter. How many words do you know? How could you find the meanings of the words you do not know?
2. Using context clues in this chapter, determine the meanings of each term in boldface type.

Purpose for Reading

1. Develop a purpose for reading the chapter by forming a question from each section head. For example, before reading Section 4:1 ask yourself, "How was Earth's place in space determined?" Try to think of questions for other headings as you read.
2. Read over the chapter end questions in the chapter review, and the *Making Sure* questions at the end of some text sections. These questions also can help you define the purpose for reading the chapter.

As you preview the chapter, think about the materials you will be learning. Your comprehension of the text material should greatly improve if you take the time to "warm-up" your brain.

1620–1732

It was 1600. On the streets of London, a young farm girl wandered, begging for food. A landlord had evicted her family from their farm only a week before. What lay in store for them now, she wondered. Was there some place they could go to escape this poverty?

In a quiet village a man sat by a midnight fire, going over his account books. He frowned. Prices in England kept rising, yet his income remained the same. Was there some place a hardworking shopkeeper could grow richer, not poorer?

At a small church in Plymouth, five men and women gathered to talk. One of their fellow Puritans had just been arrested. It was rumored that he had been roughly treated. Would his five friends share his fate? Was there some place they could go where they could worship in peace and safety?

In the elegant dining room of a London home, two prosperous merchants lingered over a glass of sherry. Before them lay a map. One man pointed to a vast area, marked off by bold black lines. Here they intended to start a colony that would make them richer. Their eyes sparkled. The New World was filled with business opportunities for adventurous Englishmen. Was there any place more exciting to go than America?

Why would Englishmen and women be willing to risk the perils of an ocean voyage and the dangers of an unknown world? What kind of societies did they hope to build on the other side of the Atlantic? You'll find some answers to these questions in this chapter.

Sections in This Chapter

1. The Background for Colonization
2. The New England Colonies
3. The Middle Colonies
4. The Southern Colonies

1700–1760

In the early years of settlement, the colonists thought of themselves in Old World terms, as Britons, Dutch, or Germans transplanted to a new environment. Later, their sons and daughters identified themselves by their colony—as Rhode Islanders, Virginians, or New Yorkers. Few, if any, of these men and women would have described themselves as "Americans." Yet during the 18th century, the colonists were becoming just that: Americans. Puritans and southern planters, Scots-Irish pioneers and Quaker merchants were slowly forging an American character and an American culture.

In Chapter 4, you saw how the economy of the colonies linked men and women all along the eastern seacoast, creating a growing interdependence among farmers, merchants, and planters. In this chapter you will see how trends in religion, education, and government helped form this new American identity. Even certain problems—religious and political tensions, for example—would help create an American way of looking at life and dealing with its difficulties.

Sections in This Chapter

1. Religious Toleration Develops
2. A Talented Colonial Leadership
3. The Rise of the Colonial Assemblies
4. 150 Years of Warfare

3 A Community

Would you like to visit this habitat? Many different living things are found in this hot, dry place. There are animals with long, strong necks that eat leaves from trees. Some animals are eating grass, and others are trying to catch something to eat. All these plants and animals must get the things they need to stay alive.

Here grasses, trees, and animals live together in the same habitat. Populations that live together in the same habitat make up what we call a **community** [kuh-MYOO-nuh-tee].

art at left: How many animal populations are shown in this habitat?

The picture offers an opportunity to reinforce the concept of populations.

Introduction

PAGES 56–57

VOCABULARY: community

MAIN IDEA

- Populations that live together in the same habitat make up a community.

OBJECTIVE The child should be able to . . .

- **describe** what makes up a community

ADVANCE PLANNING

Set up the activity on page 59. See Lesson 3.

LESSON PLAN

1. Have the children study the picture on page 56 and ask them to identify the different populations in the picture. (zebras, giraffes, lions, birds, grasses, trees, small animals) Call their attention to the activities of the animals in the picture. Ask them to describe what the animals are doing. (eating, walking, flying) Stress that much activity is taking place among the animals. Now ask the children to describe the habitat of these organisms. (hot, dry, etc.)
2. Have the children read the first paragraph on page 57. Emphasize that these animals must obtain food from their habitat.
3. Now have the children read the last paragraph. Write the word *community* on the chalkboard. Help the children pronounce it. Ask them to describe their community. Ask them to name populations growing in their own community. (people, dogs, cats, trees, dandelions) You may wish to write the names of the populations on the chalkboard. Point out that much variation occurs among the populations in the community.

HOW TO USE
Land of Promise

Land of Promise has been organized so that you will find it easy to use. The book is divided into 10 units and 36 chapters.

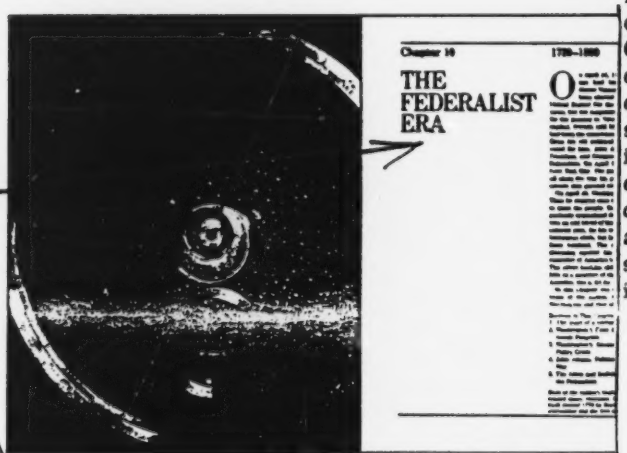
Unit Opener

UNIT ORGANIZATION

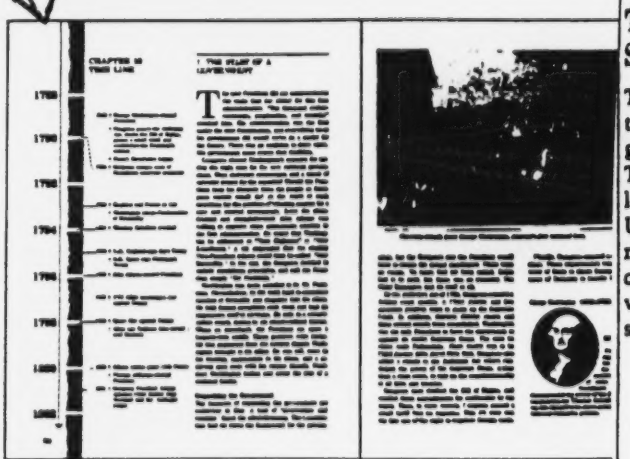
Each unit begins with a page that features a photograph, a unit description, and a list of chapters in the unit. The end-of-unit test allows you to review the main ideas and facts from that unit.

CHAPTER ORGANIZATION

Each chapter includes an introduction, a time line, several sections, and a two-page chapter review. The Chapter Introduction provides the key themes of the chapter. The Chapter Time Line gives you the important dates. The Section Heads show at a glance the main ideas of the chapter. Key Terms and People are shown in dark print where they are first identified. At the end of each section are Section Review questions that focus on these key terms, people, and main ideas. By skimming a chapter and reading the introduction, time line, headings, boldfaced terms and people, and Section Review questions, you will get a good idea of what to study.



Chapter In



Chapter Time Line

Presiden

Each chapter has three special content features. Presidential Gallery provides a capsule revie of each President's term of office. From the Archives include selections from major document in American history and excerpts from songs, novels, and diaries. Life in America includes a variety of social history topics such as family life, biographies, inventions, and popular culture.

THE GEOGRAPHIC SETTING

There are special essays in your text that focus on the impact of geography on American history. These Geographic Setting essays look at three major regions of th United States and show how th natural features of the land—the climate, landforms, and vegetation—influenced human settlement.

VISITING THE PAST

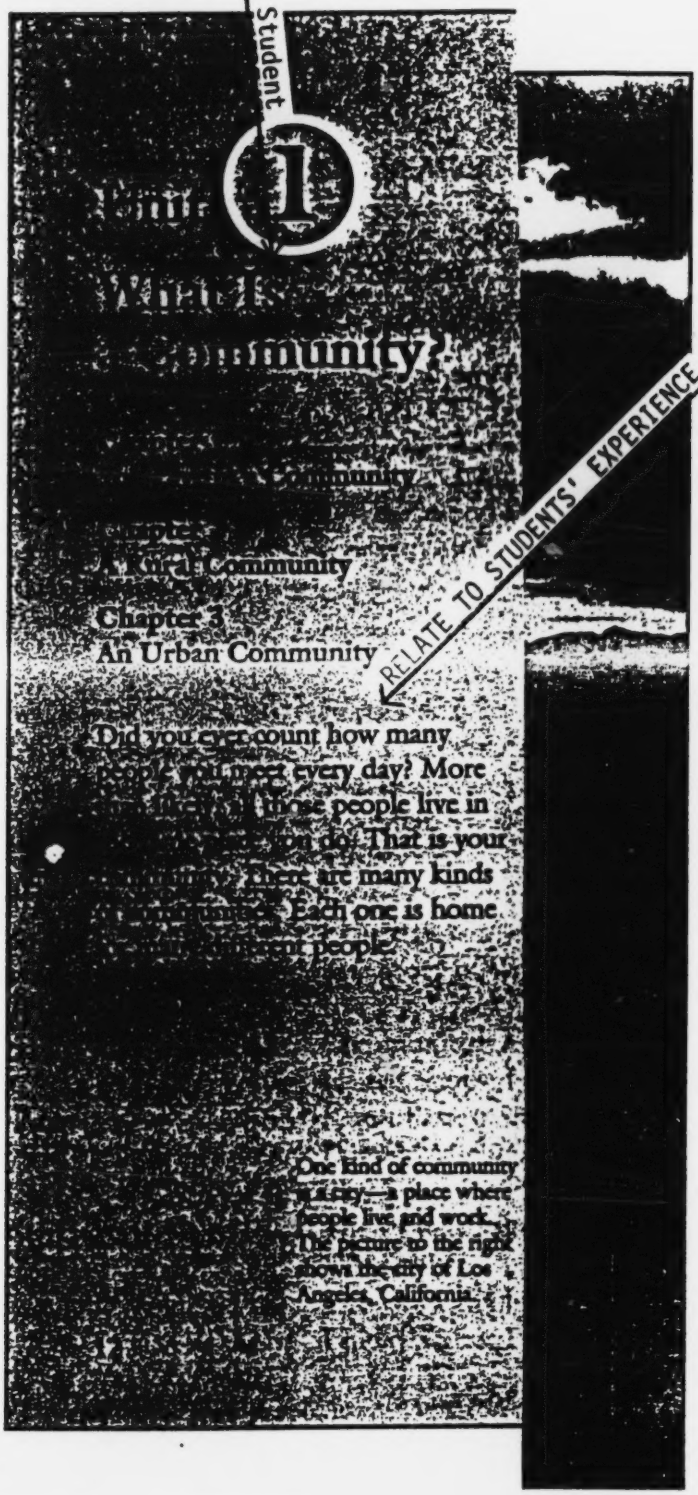
Like an in-book field trip, each Visiting the Past essay focuses on places you can visit of interes in the unit you are studying. These essays discuss the difference between original and reconstructed sites and show yo

Unit 1 (pp 12–53)
includes the following chapters:

1 You Live in a Community page 14
★ TIME OUT for Map and Globe Review page 25
2 A Rural Community page 31
3 An Urban Community page 39

Focus
Unit 1 focuses on the elements that make up communities and on the many differences among communities—differences in size, in geographic location, in patterns of housing, in leisure activities, in business and industry.

Teacher
OVERVIEW
Student



TEXT STRUCTURE

Using the Unit Opener
If you haven't done so already, take time to introduce students to their book. Have them locate such information aids as the contents, map list, atlas, glossary, and index. Write these words on the chalkboard. Ask volunteers to write the appropriate page number next to the the words. Example: *Glossary p. 276.* These same volunteers could be asked to explain the purpose of the information aids.

RELATE TO STUDENTS' EXPERIENCE

While the students read the unit opener, write on the chalkboard or on oak tag the heading, "People in Our Community." Ask: *Who are some of the people you see or talk to each day—on the way to school, going shopping, on the weekend?* Write down their answers, which will include friends, teachers, store personnel, street or phone maintenance people, mail carriers, etc. Students may add more individuals on following days. Say: *These people are part of our* community. *Let's read to find out more about our community and other communities.*

Activity Guide
Chapter 1

Consistent structure

Activity 1-1. Observation (p. 8)

Process Skills
observing
communicating
interpreting data
Problem: How well do your observations compare to those of others?

Class Time Allotment: 30 minutes
Materials
15-20 objects
tray
towel to cover the tray
watch

Preparation Notes: This activity tests a student's memory and observational acuity. Use objects familiar to your students. Prepare trays before class and have them covered when the students come into the room. Use one tray for every five or six students. Trays may be borrowed from the school cafeteria.

Meeting Needs: Allow special students to record observations with a tape recorder. Assign student peers to [illegible] of special students with poor [illegible] Allow students with vision problems to feel the objects.

See page 63 for Activity Worksheet.
See page 78 for answers.

Procedure
1. Have someone place 15 to 20 small objects on a tray.
2. Cover the tray.
3. When the tray is uncovered, observe the objects for 10 seconds. The teacher or someone in the class will keep time.
4. When you have observed the objects, go back to your seat and list as many as you can.

Questions
1. How many objects were on the tray?
2. How many could you remember?
3. How did that compare to the class average?
4. Which objects were remembered by most students?
5. Can you suggest any reasons why those objects were remembered?
6. How well do your observations compare to those of others?

Answers to all six questions will vary.

Enrichment
Objects may be selected for each tray based on some common use. One tray contains all writing utensils: pens, pencils, chalk, and so on. Another tray contains all tools: screwdrivers, wrenches, pliers, and so on. Then, after students record their observations, have them draw conclusions regarding the objects on the trays: Who might own these objects? Who might use these objects? For example, a tray containing a bib, a rattle, and a rubber squeeze toy would belong to a baby.

Select photographs from popular magazines and distribute one photo to every two students. Advertisements are an excellent source of photos. Have each pair of students observe the photos for ten seconds and then record observations. Ask your students to arrive at conclusions by asking them questions such as: From what magazines do you think the photos were taken? Whom was the photo meant to attract (teenagers, parents, businesspersons, and so on)?

Activity 1-2. Observing a Property of Air (p. 10)

Process Skills
observing
communicating
interpreting data
predicting
Problem: Does air expand or contract when heated?

Class Time Allotment: 25 minutes
Materials
2 balloons
2 glass tubes
2 Erlenmeyer flasks
2 one-hole rubber stoppers
mineral oil
twist-ties
hot plate

Preparation Notes: You may want to have students suggest a hypothesis based on the problem of the experiment. The procedure tests the hypothesis and makes use of a control. Carefully explain each part of the activity before you proceed. You may answer the questions together as a class so that students understand the process of scientific inquiry and investigation. Have students write this activity in their notebooks as a first lab report in the same format that you expect for all their future lab reports. You may wish to insert the glass tubing into the stoppers

Using Land of Promise Teacher's Edition

Information for teachers

The *Land of Promise Teacher's Edition* has been designed to help you achieve maximum teaching efficiency with a minimum of effort and preparation. The *Teacher's Edition* includes both a Teacher's Guide Insert, which has daily lesson plans for teaching each chapter of the text, and Annotations printed in blue type throughout the student text, which provide teaching suggestions and answers to questions.

TEACHER'S GUIDE INSERT

The Teacher's Guide Insert is or
ganized according to
begins with the title
the year it covers, a
on which it appears.
Overview is provide
cludes a short synop
chapter for quick ref
breakdown of how t
organized into lesso
ed is a listing of Rel
for Reteaching and
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sheets that are in th
Resource Book. Ea

Chapter Title

Chapter Overview

Learning Objectives

Key Terms and People

organized into daily lessons. A lesson begins with a list of science concepts both within the text and in everyday activities. The terms are printed in boldface type, and many are followed by phonetic spellings. Each term is clearly defined and reinforced throughout the discussion. A variety of other text features enhances readability. Some suggestions to aid you are given in Reading Science on page 23T.

Photographs and Illustrations

To aid student understanding and to stimulate interest, more than 500 color graphics—including illustrations, diagrams, and photos—are included in ***Focus on Physical Science.*** A two-page photograph accompanied by an explanation and questions introduces each unit. Each chapter begins with a large photo and an introductory paragraph designed to be thought-provoking and motivating. Throughout each chapter, the graphics reinforce, clarify, and provide additional information about concepts discussed in the sections. In activities, diagrams provide models for setting up apparatus. Use these graphics as much as possible in your presentation of the chapter concepts to enhance student comprehension. Many difficult concepts can be understood readily when represented graphically. Help students to think of the graphics and captions as an integral part of the text, not as something to be skipped over.

Margin Notes and Review Questions

Questions, printed in blue, are placed in the margin of the Student Edition to aid reading comprehension. Encourage students to answer the questions as they read each section. Point out that the questions highlight main points and are useful for note-taking or outlining. Answers to all of the margin notes are marked with red tints in the *Teacher Annotated Edition.*

Making Sure questions are designed for checking the recall and understanding of ideas presented in one or more sections. The questions are useful to students as a self-test, to teachers as a check of student reading comprehension, and for class discussion. If they cannot answer the *Making Sure* questions, students should reread the sections immediately preceding the questions. Answers to *Making Sure* questions appear in red in the *Teacher Annotated Edition.*

Activities

Each chapter of ***Focus on Physical Science*** contains several activities. These activities are of two types. The short paragraph activities have the following format: Problem, Materials, Procedure, Questions. These shorter activities require little preparation and often are observational in nature. The step-by-step procedures are generally finished quickly, allowing ample time for post-lab discussion. The longer, full-page activities require more time for data collection and interpretation. These activities have the following format: Problem, Materials, Procedure, Data and Observations, Questions and Conclusions. Relate this format to the form of a lab report. An activity worksheet is provided for each activity in the *Teacher Resource Book.*

Before beginning any activity, call attention to **CAUTION** statements included in the procedure, and review appropriate lab safety and equipment use guidelines. Appendix B in the Student Edition, Laboratory Safety in this Teacher Guide on page 34T, and the Safety Checklist in the *Teacher Resource Book* may be helpful.

Additional information about the activities, including preparation notes, alternate procedures, and substitute equipment is given in this Teacher Guide and in the *Teacher Resource Book.* Answers to questions can be found under the activity numbers in the section-by-section portion of this Teacher Guide. Sample data is provided where appropriate. Keep in mind that values listed as sample data are only examples of possible answers. A master equipment list for all text activities begins on page 34T.

Although all activities are placed at the end of sections, this placement should not imply that the activities are to be performed only after the reading. Because teachers use activities at many different points in presenting a concept, placement at the end of sections allows you more flexibility to use them at the time that suits your purposes. This placement also aids the general readability of the text, as they do not interrupt the general flow of ideas.

Focus Pages

Each chapter contains one of three types of focus page: *Skills, Frontiers,* or *People and Careers.* The *Focus on Skills* pages are designed to give students practice in reading and study skills as they relate to physical science. The *Focus on Frontiers* pages discuss new developments in physical science that relate to the chapter in which they are found. The *Focus on People and Careers* may be used to highlight career

To the Student

Information for students

Science is the body of information including all the hypotheses and experiments that tell us about our environment. All people involved in scientific work use similar methods for gaining information. One important scientific skill is the ability to obtain data directly from the environment. Observations must be based on what actually happens in the environment. Equally important is the ability to organize this data into a form from which valid conclusions can be drawn. The conclusions must be such that other scientists can achieve the same results.

Focus on Physical Science: A Learning Strategy for the Laboratory is designed for your active participation. The activities in this manual require testing hypotheses, applying known data, discovering new information, and drawing conclusions from observed results. You will be performing activities using the same processes that professional scientists use. Work slowly and record as many observations and as much numeric

organize your data. U

Each activity in ***Foc*** guide you in the proc about the problem und These statements emp equipment and supplie the activity. Data and observations, no matt data into tables or gr **Questions and Conclus** are designed to test yo **Strategy Check.** If you activity. If not, rerea

Remember that the important as the "righ

To the Student

You are embarking on an adventure into the study of physical science that will be both interesting and practical. Solar energy, machines, chemical changes, radiation, electricity, and many other aspects of your environment are all part of physical science. Physical science will help you to understand many phenomena that occur in your everyday life.

Scientists use certain methods in solving problems and developing new ideas. In this course you will learn about these scientific methods and how to use them. You will discover that you can use the methods of science in your daily life. These methods will increase your success in solving many types of problems.

Most people would like to make the world a better place in which to live. For example, what you learn in physical science can be used to help conserve natural resources. Conservation is an important step in helping to solve the world's energy problems. Physical science principles are used in designing the equipment to clean up air and water. These principles are also used in producing devices that make work easier.

One of the important decisions you will make in the future is a choice of a career or job. A background in physical science is very useful in many jobs. It may even be required. In your physical science class, you will have a chance to explore your science interests and abilities as they relate to different types of jobs. Careers in chemistry, physics, health services, home economics, engineering, mechanics, environmental protection, and many other fields make use of basic physical science principles.

Focus on Physical Science contains many features that will help you learn. Each chapter begins with a photograph and brief introduction to the theme of the chapter. Goal statements identify what you can expect to learn as you study the chapter. Throughout the chapter, margin questions printed in blue emphasize the main ideas. Use these questions as self-checks to evaluate your progress.

Major terms are highlighted in boldface type and are often spelled phonetically. Groups of review questions called *Making Sure* have been placed throughout the chapters. These questions provide another means of self evaluation.

At the end of each chapter, a *Summary* provides a list of the major points and ideas presented. A Vocabulary list serves as a reminder of the important new terms. Also at the end of each chapter are sets of questions and problems. *Questions* contains questions that are useful as a review of the chapter's concepts and questions that require you to apply what you have learned to new but related ideas. In addition, a set of projects and thought-provoking problems are presented in *Ideas to Explore*. *Readings* lists sources of more information.

Focus pages, located at the ends of all chapters, introduce you to *People and Careers* and *Frontiers* of physical science. *Focus on Skills* pages offer tips on successful learning of physical science.

Included in certain chapters are *Technology* features. These features provide exciting information on new technological developments in physical science.

A *Focus on Computers* feature located at the end of each unit offers you the opportunity to explore the use of computers as you study physical science.

At the end of the textbook are the *Appendices*, *Glossary*, and *Index*. The *Appendices* contain additional tables and background information to help you in setting up the activities. The *Glossary* contains definitions of the major terms presented in the textbook. The complete *Index* will help you locate quickly particular topics within the textbook.

This textbook has been written and organized to help you succeed in your science class. As you do your classwork and complete your assignments, you will gain the satisfaction of understanding physical science and its applications in everyday life.

3. THE THREE BRANCHES OF GOVERNMENT

The writers of the Constitution thought that a national government had to perform three major functions: pass laws, carry out laws, and interpret those laws through some form of court system.

The Constitution makers decided to divide these jobs among three branches of government: Congress passes the laws. The President, or chief executive, carries out those laws. The judiciary, or court system, interprets the laws.

This, they believed, would offer protection against tyranny because power would be divided rather than concentrated. This principle of the **separation of powers** is the heart of the Constitution.

To ensure that no single branch of the government could acquire tyrannical powers over the others, the Constitution makers created an elaborate system of "checks" on each branch by the [illegible]. These checks guarantee a balance [illegible] the separation of powers within the government.

A

Checks on Congress

Article 1 of the Constitution gives Congress the power to make the laws of the nation. What are some of the checks on this authority?

1 First, the President can veto [vē'tō], or reject, any bill passed by Congress. Although Congress can then vote to override the veto, it is hard for Congress to muster the necessary two-thirds vote to defy the President's wishes.

2 Second, Congress is checked by the President's prestige and ability to influence public opinion. The President can put pressure on Congress to pass a certain bill by appealing to the voters. The President can call a press conference, deliver a message to the nation supporting the bill, and ask the citizens to make their views known to their representatives in Congress. The President can also call a special session of Congress if it has not acted on the bills the Executive supports.

3 Furthermore, the President can influence how strongly a law passed by Congress is enforced.

4 Another check on the power of Congress comes from the judiciary. The Supreme Court can check the law-making powers of Congress by ruling on the constitutionality of a law. This power—called the power of judicial review—was not written into the Constitution. It developed early in the 1800s, as you'll see in Chapter 11.

5 Furthermore, because the Congress has two houses, each with separate functions, there is an internal checking system in the legislative branch. A bill must be approved in both the House and the Senate before it is ready to go to the President's desk to be signed into law.

B

Checks on the President

Article 2 of the Constitution gives the President the power to carry out the laws. What are some of the checks on this authority?

1 First, Congress can remove the President if the Executive is found guilty of misusing power. In such a case, the House of Representatives draws a bill of impeachment* which charges the President. Then the Senate tries the case. President Andrew Johnson was impeached in 1868, and an impeachment hearing was held in 1974 during the administration of Richard Nixon. No President has ever been convicted and removed from office.

2 A second check on the power of the President is in the area of approving appointments. The President appoints various government officers. However, no appointment becomes final until it is confirmed by a majority vote of the Senate.

3 Third, the President's power to make treaties with foreign nations can be checked. Before a treaty becomes official, it must have the approval of two-thirds of the Senate.

4 Fourth, the President's power to veto a bill passed by Congress, which is a check on the legislative branch, can itself be checked. The Congress can override a veto by a two-thirds vote.

5 Fifth, the President can create programs, but Congress can check them through its "power of the purse." Because Congress controls taxation and government spending, it can greatly influence the Executive's program.

*bill of impeachment formal accusation that commits an accused public official for trial. A simple majority of the House is sufficient to impeach.

RETEACHING. Either on the chalkboard or on an overhead, list the checks and balances that each branch is able to exercise over another. Students should copy these lists onto their own paper. It may also be helpful to have students list the powers of each branch.

ENRICHMENT. Have students create a chart showing the checks and balances at work at the state level in your state. Then a comparison should be made between the federal and state levels. Students will then see how our Constitution has filtered down to the state level.

Checks on the Judiciary

Article 3 of the Constitution gives the judiciary the power to interpret the laws of the nation. What are the checks on this authority?

First, Congress has the same power to impeach and remove a federal judge as it has to impeach and remove a President. This power has been used many times.

Second, the Senate has the power to approve or reject the appointment of judges.

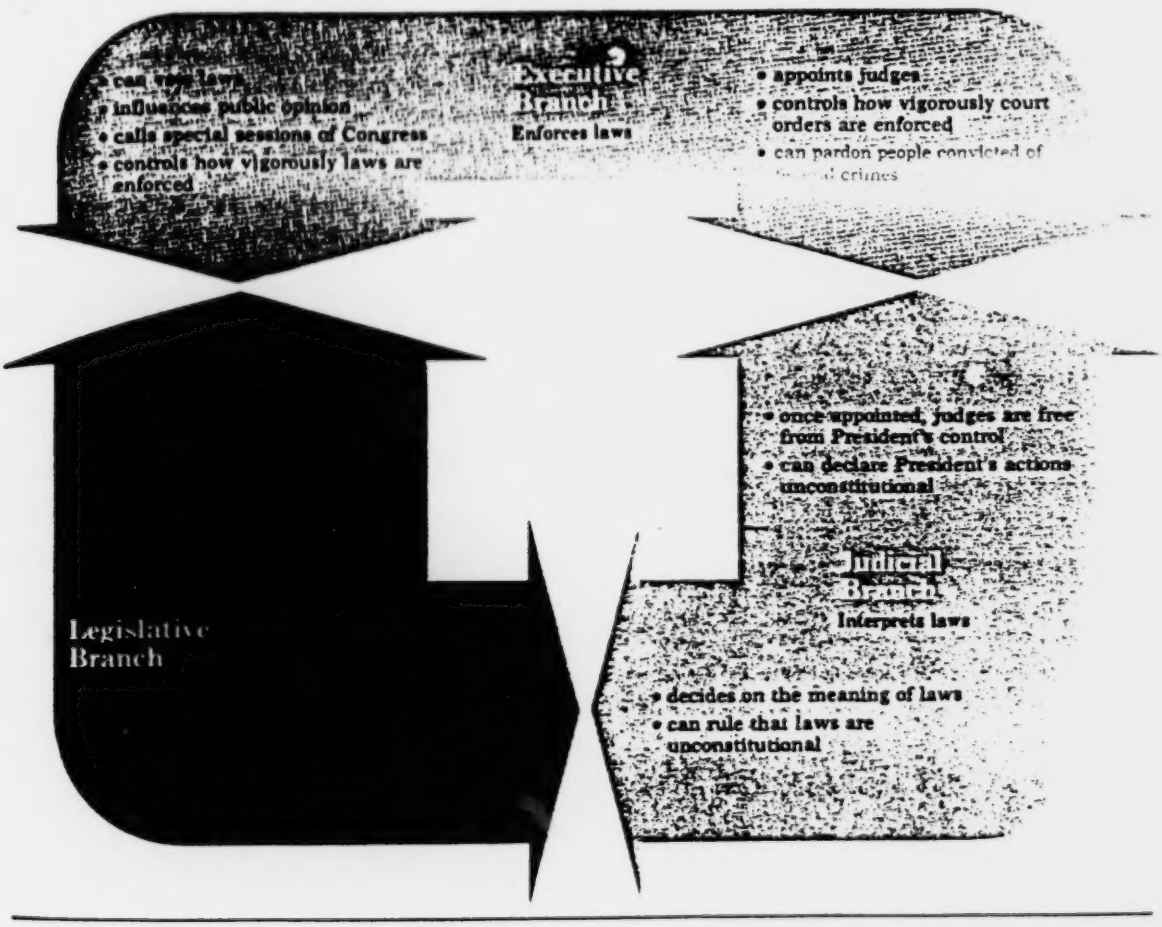
Third, to overturn Supreme Court decisions, Congress can propose constitutional amendments and submit them to the states for approval.

Fourth, because Congress establishes the number of justices on the Supreme Court, it can influence the Court's opinions. Today, there are nine members of the Court, but in the past there have been as many as ten and as few as five.

Fifth, the President has the power to appoint federal judges, with the approval of the Senate. This power of appointment gives the President great influence over how the law is interpreted. By selecting men or women who share a President's own legal and political viewpoint, the Executive can influence decisions. Note that this appointment power checks more than the judiciary: It also operates as a check on Congress because the Court can rule unfavorably on congressional legislation.

Sixth, the President has the power to check

CHECKS AND BALANCES IN THE FEDERAL GOVERNMENT


• can veto laws
• influences public opinion
• calls special sessions of Congress
• controls how vigorously laws are enforced
Executive Branch
Enforces laws
• appoints judges
• controls how vigorously court orders are enforced
• can pardon people convicted of
Legislative Branch
• once appointed, judges are free from President's control
• can declare President's actions unconstitutional
Judicial Branch
Interprets laws
• decides on the meaning of laws
• can rule that laws are unconstitutional

Supreme Court interpretation by determining how vigorously the law will be enforced.

7. Finally, the President can also decide to pardon men or women convicted and sentenced to prison by federal judges, thus checking judicial power.

Checks and Balances in Federalism

An additional example of checks and balances at work is one that the delegates to the convention did not purposely create. That example is federalism. Because of federalism, two systems of government cooperate, but they also compete. When the goals of the state government and the goals of the national government differ, the tensions between the two can serve as a check on each.

Protecting Diversity

The separation of powers, with its built-in system of checks and balances, was created to protect Americans against governmental tyranny. The people who drafted the Constitution also had another goal. They wanted to make the nation's government a safe forum for competing interests and viewpoints. They believed that it was the nature of human beings to differ. As James Madison pointed out in the *Federalist* essay number 10, there are rich and poor, debtors and creditors, people in commerce and in agriculture, citizens with one religious creed and with another. Government had to handle this human diversity.

Government might see diversity as a threat, Madison said, and try to force all people to have "the same opinion, the same passions, and the same interests." This would require a government to turn its back on a commitment to civil liberties. Such a government, Madison warned, would create a tyranny of uniformity.

A second way to handle the natural tendency of people to differ might be to allow these differences, but forbid them to compete. This, too, would require a severe restriction on civil liberties.

The delegates to the Constitutional Convention rejected both of these solutions. Instead, they designed a government that allowed the differing interests to compete—according to the rules of law. In this way violence might be prevented. The problem in designing a government was to find a way to ensure that no person or single interest group could seize control of the government and dominate it for selfish ends.

1. **Preventing tyranny by a minority** The separation of powers seemed to ensure against such a tyranny. In order to control the United States government, a minority interest group would have to win a majority in Congress, win election to the presidency, and gain the majority of seats on the Supreme Court. Such a combination is not easy to achieve. Also, the staggered terms for senators, representatives, and the President would make it hard for any group to capture all these offices at once.

2. **Preventing tyranny by the majority** However, Madison and his fellow delegates felt that the greatest threat to liberty might come from a determined majority. The "tyranny of the majority" would surely infringe on the liberties of others as it asserted itself. In the *Federalist* papers, Madison wrote eloquently of the rights of a minority. When he wrote this, Madison was thinking specifically of the rights of the wealthy to enjoy their property. Shays' Rebellion was on Madison's mind. But the principle of minority rights logically extends to other minorities in matters of race, sex, religion, and political views.

The separation of powers and the elaborate system of checks and balances can slow the process of government. But those who created this system believed that efficiency was less important than safeguarding liberty.

SECTION 3 REVIEW

Key Terms and People: separation of powers, balance of powers

Main Ideas

1. What are the three major functions of government?
2. Explain how the separation of powers and the balance of powers help protect against tyranny.
3. Name four ways that congressional power is "checked" by the other government branches.
4. Name four ways that presidential and judicial power are checked.
5. How does federalism serve as another check against tyranny?
6. How did the framers of the Constitution ensure that no single group could dominate the government?

ANSWERS

1. to pass laws, carry them out, and interpret them.
2. No one branch has all the power, and the "checks" give all branches a legal right to keep the others from getting too powerful.
3. by (a) presidential veto (b) presidential prestige and influence on public opinion (c) presidential right to call a special session (d) judicial review of legislation and (e) give-and-take in and between the two houses
4. Checks on the President: (a) impeachment by Congress, (b) congressional approval of appointments and treaties, (c) congressional override of veto, and (d) failure by Congress to fund presidential programs. Checks on the judiciary: (a) impeachment by Congress, (b) Senate-approved appointments, (c) proposal by Congress of a constitutional amendment to overturn decisions, (d) determination by Congress of number of justices on the Supreme Court, and (e) the President's right to appoint federal judges and pardon those convicted of crimes.
5. because the two government systems—state and national—are competing for power and neither gets it all
6. by creating the separation of powers and specifying staggered terms for

FROM THE ARCHIVES

Albert J. Beveridge Argues for Imperialism

Here is an excerpt from Beveridge's famous speech, entitled "The March of the Flag," delivered at Indianapolis, Indiana, on September 16, 1898. He was elected to the Senate in 1899.

The ocean does not separate us from lands of our duty and desire—the oceans join us. . . . Steam joins us; electricity joins us—the very elements are in league with our destiny. Cuba not contiguous [next to the U.S.]! Porto Rico not contiguous! Hawaii and the Philippines not contiguous! Our navy will make them contiguous. . . .

[Today] we are raising more than we can consume. Today we are making more than we can use. . . . Therefore we must find new markets for our produce, new occupation for our capital, new work for our labor. . . .

Think of the thousands of Americans who will pour into Hawaii and Porto Rico when the republic's laws cover those islands with justice and safety! . . . Think of the hundreds of thousands of Americans who will build a soap-and-water, common-school civilization of energy and industry in Cuba, when a government of law replaces the double reign of anarchy and tyranny!

William McKinley 1843–1901

IN OFFICE: 1897–1901

Republican from Ohio. During McKinley's presidency, the United States became a world power. In 1898, Hawaii was annexed, and, as a result of the U.S. victory in the Spanish-American War, the nation acquired the Philippines, Puerto Rico, and Guam. McKinley's administration was also noted for the end of the 1890s depression, the passage of a high tariff (1897), and the Gold Standard Act (1900). President McKinley was assassinated in 1901.

By the Way

When Indiana became a state, the people had to decide where to put its capital. The people in the north wanted the capital to be there. The people in the south wanted it in the south. So they built their capital in the middle of the state. In 1819, there was only a log cabin in the new capital of Indianapolis. Today, it is a city of 700,000 people.

History Update

Our mail did not always go from place to place by trucks or airplanes. Many years ago, it was carried on horseback. Beginning in 1860, riders for the Pony Express carried mail between St. Joseph, Missouri, and Sacramento, California.

Along the route were 157 stations where riders changed horses. Stations were about twelve miles apart. After six stations, a rider gave his sack of mail to a new rider. A letter traveled the entire 1,838 miles in ten days. Though it lasted only eighteen months, the Pony Express provided many stories about the bravery and adventures of its heroic riders.

FOCUS ON People and Careers

Geologist

Cynthia Dusel-Bacon will tell yo
geologists always face danger in the
outdoors. "And" she adds, "becaus
remote, there are special dangers in
But Cynthia Dusel-Bacon has fa
danger than most. On her third fi
ment in the Yukon-Tanana Uplanc
she was severely mauled by a b

Today, Ms. Dusel-Bacon is a
for the Branch of Alaskan Geol
Western Region. She sees h
metamorphic rocks in Ala
challenge. "There is so much
there. It is such a puzzle."
chief of two projects, one ir
the metamorphic rocks in e
the other in which she com

giving information about metamorphism, particularly the temperature and pressure conditions under which the rocks recrystallized, in all of Alaska.

As she looks at one map, Dusel-Bacon states, "All these various pieces of Alaska have come from elsewhere and have been accreted to what was a continental margin. We don't know where some of the rocks come from. The rocks in the basement of one section are two billion years old. There are no rocks of this age along the western margin of North America! There are many areas of Alaska that, we believe, originated in other parts of the world and were plastered onto the areas that are now part of Alaska. We call the areas that may have originated elsewhere 'suspect terranes.' Alaska is a jigsaw of
...ect terranes."
...s what has happened on Earth is
...ays. In searching for
...Dusel-Bacon
...mi-

Technology

The Alaskan Puzzle

According to the theory of plate tectonics, continents are believed to grow at a slow but steady rate along their outer margins. However, researchers in Alaska have found evidence that suggests that sometimes continents grow by the addition of large blocks of crust called terranes. Using fossil and magnetic data, some scientists believe that Alaska is a jumble of terranes. Many of the Alaskan terranes are of oceanic origin and are composed of oceanic crust, island arc material, or mid-ocean ridge material. These terranes have been "scraped-off" oceanic plates as they were subducted into the mantle at a convergent boundary.

Several other terranes are fragments of continents, some of which originated at or near the equator. These crustal blocks have been transported 9000 kilometers north during the past 200 million years. Paleontologists have found fossils, coal deposits, and dinosaur footprints in these terranes that suggest a tropical origin for these crustal blocks. Paleomagnetic data also indicate that several of the blocks formed in areas different from their present locations. As geologists continue to study the Alaskan terranes, the history of Earth's surface and the movement of plates will become clearer.

FOCUS ON Frontiers

Desert Expansion

ting down trees for firewood strip areas of vegetation and speed up desert expansion.

Droughts and the misuse of water resources also can aid desert expansion. Wells drilled to hault desert expansion actually can accelerate the process by attracting more people and herds to the fertile spot. In some areas, farmers have tapped aquifers to such an extent that reservoirs are no longer usable. ·vy irrigation over long periods of time has d soil salinity in many areas, thus oil productivity.

rojects are underway in ult desert expansion. - Negev Desert in wheat, and ugh less in

FOCUS ON Frontiers

Soil Conservation

of vanishing topsoil. One group of people concerned with topsoil erosion is composed of Iowa farmers. Although good soil helps make Iowa one of the most productive agricultural states in the nation, its topsoil is slowly vanishing. The Soil Conservation Service's records sho- vears ago, Iowa had 36 i to 4 oil. Today, only 15 to rid

farmers have been e of sing this method, o that ed without using such a ts such as plows lot planting, is up a narrow e seed. ntages over itself is to clear the screen. 1. Also

FOCUS ON Computers

Earthquake Epicenters

Background Data

In Chapter 13, tudied earthquakes and the information about Earth's interior. Wher tremendous an it moves awa different type than S-wave arrive at a s The farther difference be used i computer

Program

```
10  HOME : IF Q = 1 THEN 260
20  I = I + 1:N = N + 1: PRINT
    "WHAT IS THE NAME OF CITY ";N;:
    INPUT C$(N)
30  IF I = 1 THEN PRINT "WHAT IS
    ARRIVAL TIME OF THE P-WAVE"
40  IF I = 2 THEN PRINT "WHAT IS
    ARRIVAL TIME OF THE S-WAVE"
50  PRINT "HOURS ";: INPUT H(0, IF
```

```
160 D(N) = D(N) + 1250:S = S - 120: IF
    S < 120 THEN D(N) = D(N) + (1250 *
    (S / 120)): GOTO 230
170 D(N) = D(N) + 1400:S = S - 120: IF
    S < 120 THEN D(N) = D(N) + (1400 *
    (S / 100)): GOTO 230
180 D(N) = D(N) + 1850:S = S - 120: IF
    S < 120 THEN D(N) = D(N
```

Programming Notes

The computer reads each line of the program and executes the command listed there. In this program, line 10 is used to clear the screen. Some computers use the command HOME. Use the command itself is to clear the screen.

LIFE IN AMERICA

HISTORY OF THE CREDIT CARD

Credit is an ancient arrangement, but credit cards are relatively new. In just a few short years, they have become a multi-billion dollar industry. In 1887 Edward Bellamy, a lawyer and journalist, wrote *Looking Backward, 2000–1887*, in which he conceived of a credit card. His idea was of a card issued by the government with a value equal to one's contribution to society. Each time a purchase was made, a portion of the card would be punched out. No money would be needed.

A radio store of the 1920s

The First Credit Cards

The first credit cards, as we know them, were used in 1900 by hotels and issued to their most prominent customers. By 1914 department stores, which long had been extending credit to wealthy customers, starting using credit cards in order to urge monthly payments on accounts.

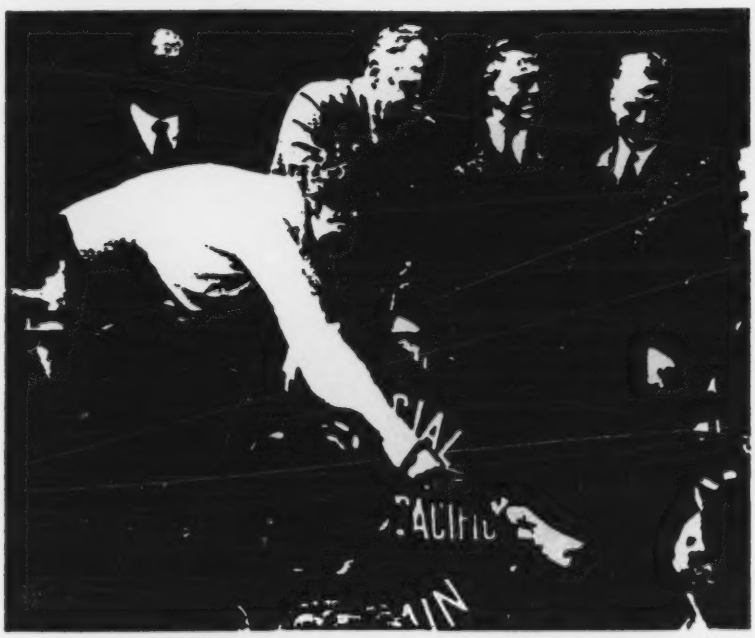
The real growth of credit cards, however, depended on the development of computers. Once the cost of all the paperwork involved in credit extension could be minimized, the industry took off. In 1958 the Chase Manhattan Bank and the Bank of America revolutionized the industry by introducing one credit card accepted almost everywhere. Now one need not carry dozens of cards—a single piece of plastic could be used to charge everything from fun to funerals. That handy piece of plastic has been a mixed blessing ever since.

LIFE IN AMERICA

ELEANOR ROOSEVELT'S INFLUENCE ON THE NEW DEAL

Eleanor Roosevelt was probably the nation's most controversial wife of a President. Throughout her life, she was an active reformer and supporter of unpopular causes. Millions loved her: in the 1950s, American women consistently voted her the woman they most admired. To those who disliked FDR, however, she was a symbol of everything wrong with the New Deal.

In the 1920s, Eleanor Roosevelt became an active political campaigner for FDR. During his presidency, she was one of his closest advisers, a key figure in establishing policies for the CWA, the WPA, the NYA, and other agencies. She fought to win jobs and equal pay for women, and she actively lobbied for civil rights laws at a time when support for racial equality was extremely controversial.



Eleanor and Franklin D. Roosevelt at Fremont, Nebraska in 1935

Constantly traveling on fact-finding trips, she acted as FDR's "eyes and ears," visiting communities, relief projects, schools, and citizens' groups. One famous *New Yorker* cartoon depicted a coal miner saying to his co-worker: "For gosh sakes, here comes Mrs. Roosevelt!" Later she did go down in a coal mine. She also reached the public through twice-weekly radio broadcasts, press conferences, a daily newspaper column, and a monthly magazine column. To millions she represented the innovative energy and humanitarian spirit of the New Deal.

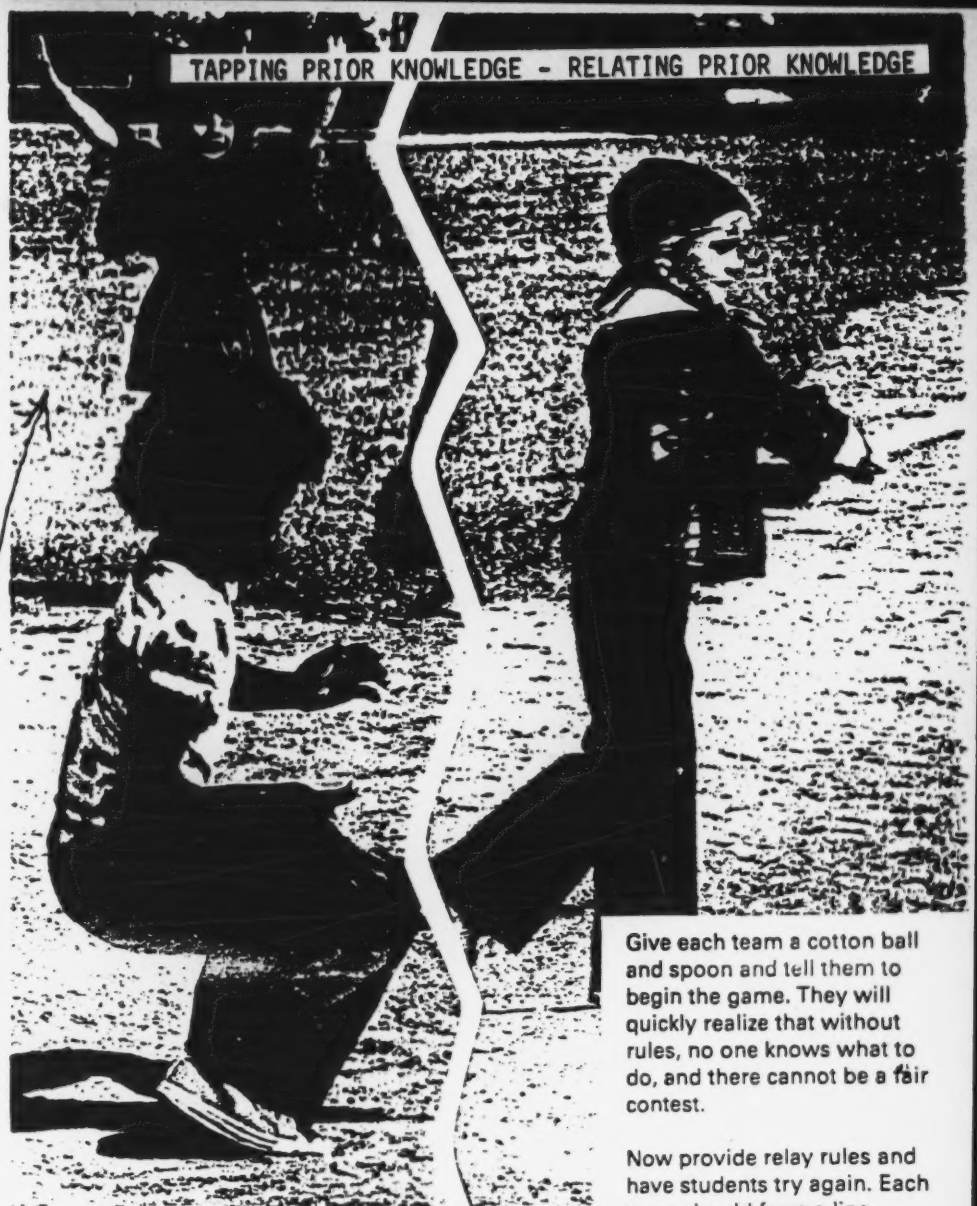
Unit 4 Communities Need Government

Chapter 10
Why We Need Rules

Chapter 11
How Community Government Works

Chapter 12
Governing a Nation

Suppose you and your friends want to play a game. How do you decide the rules of the game? You get together and talk about it. You [illegible] by those rules. People in communities do the same thing. They set up rules, too, and then agree to use the rules to settle arguments and solve problems.



What do you think would happen if these children tried to play baseball without rules?

TAPPING PRIOR KNOWLEDGE - RELATING PRIOR KNOWLEDGE

Using the Unit Opener
Have a volunteer read the opening paragraph. Then discuss what students see in the photograph. Ask: *How can you tell the children in this picture are using rules?* Ask students if they know any games that are played without rules.

Tell the class they are going to have a contest. Have ready two cotton balls and two spoons. Tell students that they will need two teams and have them decide which of the following ways of choosing teams is fair.

The Height Method. Players under a certain height form one team. Those over that height form the opposing team.

The Age Method. Players whose birthdays fall before July 1 form one team. Those with birthdays after July 1 form the other team.

Counting Off. Have players line up and count off by twos. The "Ones" and "Twos" form opposing teams.

The Red Method. Students wearing red are on one team. All others are on the other team.

Pulling Straws. Cut an equal number of long and short straws and have players draw without looking. Players with long straws form one team, and those with short straws form the other.

Discuss the different methods and have students tell which ones they think are fair. They should give reasons for their opinions. Say: *Being fair means giving the same treatment to everyone, or giving everyone the same chance.* Use students' chosen method to form teams.

Give each team a cotton ball and spoon and tell them to begin the game. They will quickly realize that without rules, no one knows what to do, and there cannot be a fair contest.

Now provide relay rules and have students try again. Each team should form a line. With the cotton ball on the spoon, the first player runs to a mark and back again, passing the spoon to the next player. The relay is repeated until all players have run. The first team to finish wins the race.

Relating prior knowledge

Discuss with students: *Why did you need rules? How can people decide the rules?* Help students realize that they had a common goal (playing a game) and that they needed rules to make it work. They may have figured out rules among themselves or asked the teacher to provide rules. They also chose a fair way to establish teams. Sum up by saying: *People work together to make decisions and to make things fair.*

Chapter 1

Lesson 1
Communities Are People and Places
Lesson 2
How Big Is a Community?
Lesson 3
Where Is a Community?

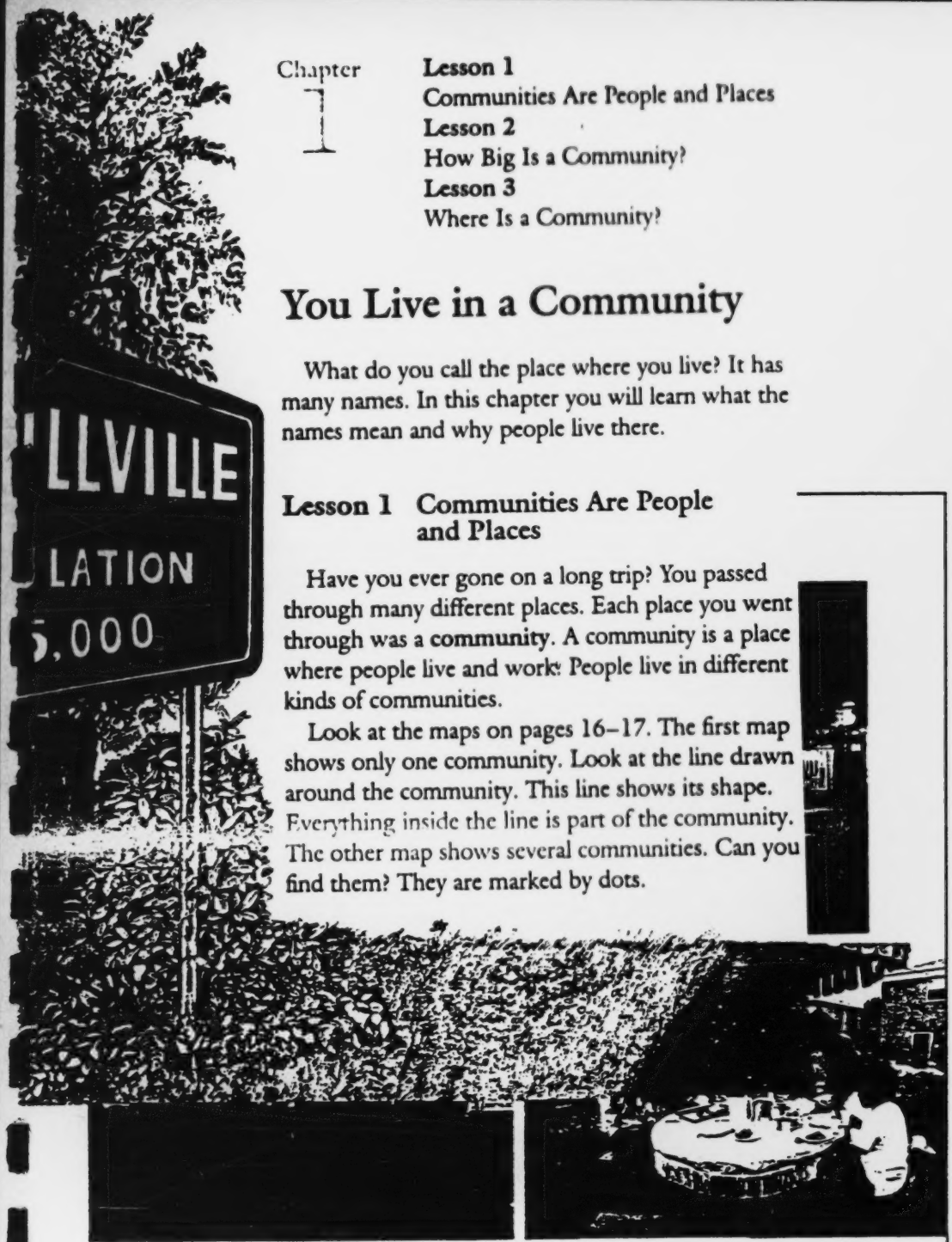
You Live in a Community

What do you call the place where you live? It has many names. In this chapter you will learn what the names mean and why people live there.

Lesson 1 Communities Are People and Places

Have you ever gone on a long trip? You passed through many different places. Each place you went through was a **community**. A community is a place where people live and work. People live in different kinds of communities.

Look at the maps on pages 16–17. The first map shows only one community. Look at the line drawn around the community. This line shows its shape. Everything inside the line is part of the community. The other map shows several communities. Can you find them? They are marked by dots.



What Makes Up a Community?

A community is a certain place. A community is partly buildings. There are stores, schools, churches, factories, offices, and homes. Most important in a community are its people. That is why a community is formed. People live there.

Imagine you are walking around your community. Everything you see has to do with people. You will see people on their way to the store. You will see people driving their cars.

A community can be made up of office and apartment buildings, town squares, neighborhood backyards, and other places. What is your community like?

Vocabulary
community

Preliminary Activity
Have students read the chapter opener. Ask: *What is the name of our community?* Write it on the chalkboard. (Answers may include name of a central city and suburb or neighborhood.) Then ask: *What are the names of some other nearby communities?* Write them on the chalkboard. (In Lesson 2, students will learn to classify communities as town, city, or suburb.)

Developing the Lesson
Before students read Lesson 1, have them locate the word *community* on page 14. Tell them that throughout the book, important, or key, social studies words are printed in dark type. These words are defined in the lesson or margin, and then in the glossary.

Have students read Lesson 1 to find out what makes up a community. Then ask: *What are some of the buildings, parks, businesses, and other things that are part of our community?* List answers on the chalkboard or on oak tag. Include airports, railway stations, schools, rivers.

Lists on oak tag of "People in Our Community" and "Buildings and Businesses in Our Community" can be used as displays and reminders of what children know about their community.

A Mystery Visitor

TAPPING PRIOR KNOWLEDGE

Who is the only person who visits your family six times a week? Watch carefully, and you will see—the mail carrier. The mail carrier brings one more service right to your home.

Services like these are one of the advantages of living in a community. It would be very costly to make your own electricity or build your own pipes. People living in communities can share these costs.

Preliminary Activity
Have students read the lesson introduction and ask them to name services their community provides for everyone. Write their answers on the board. Tell them that they will be reading to find out more about community services, and that they should keep looking for clues and guessing about other unexpected services the community provides. Add these to the list as they are mentioned.

Lesson 2 Clues for Service Sleuths

A community has many other service[s] the ones that come to your home. Keep work[ing] service sleuth. Find the services in your communi[ty].

Relating new information to previously learned information

Different Communities—Different Services

Remember the rapid-transit system that San Francisco has? When people see such a system they think of a large city. Small towns like Danube, Minnesota, don't need community transportation. People can usually walk to where they want to go.

The driver of the snowplow below is providing [a] service that [Miami], Florida, doesn't have: snow plows. Can you guess why?

Developing the Lesson
Have students read the lesson and write the following categories on the board: "transportation," "safety," "health". Have them list the services in each category that your community provides. Have students choose a symbol for publicly funded services and one for those provided by private companies, and place the correct symbol next to each

Relating information learned at school to real world

CURRENT EVENTS

Have students check their local newspapers to find news items related to their community. In one part of the room set up a bulletin board, a decorated covered cardboard box, or a reading table. Or, on a small section of the wall in the reading corner, you might put up the caption, Our Community in the News. The cardboard box could be hung by strings from the ceiling. [be attached to all four sides.] [begin to see the types of it]e [portant to people in their] [amples might say: City Cou]ncil rule to . . .; A new playgrou[nd] Old people . . .; Pollution cor[rupts]

Have the students bring in laundry detergent containers from home. Ask them to compare their ingredient lists with each other and with the lists in the book. Which detergents contain phosphates? How much phosphate is present? Ask the class how their lives would change if laundry detergents themselves were banned.

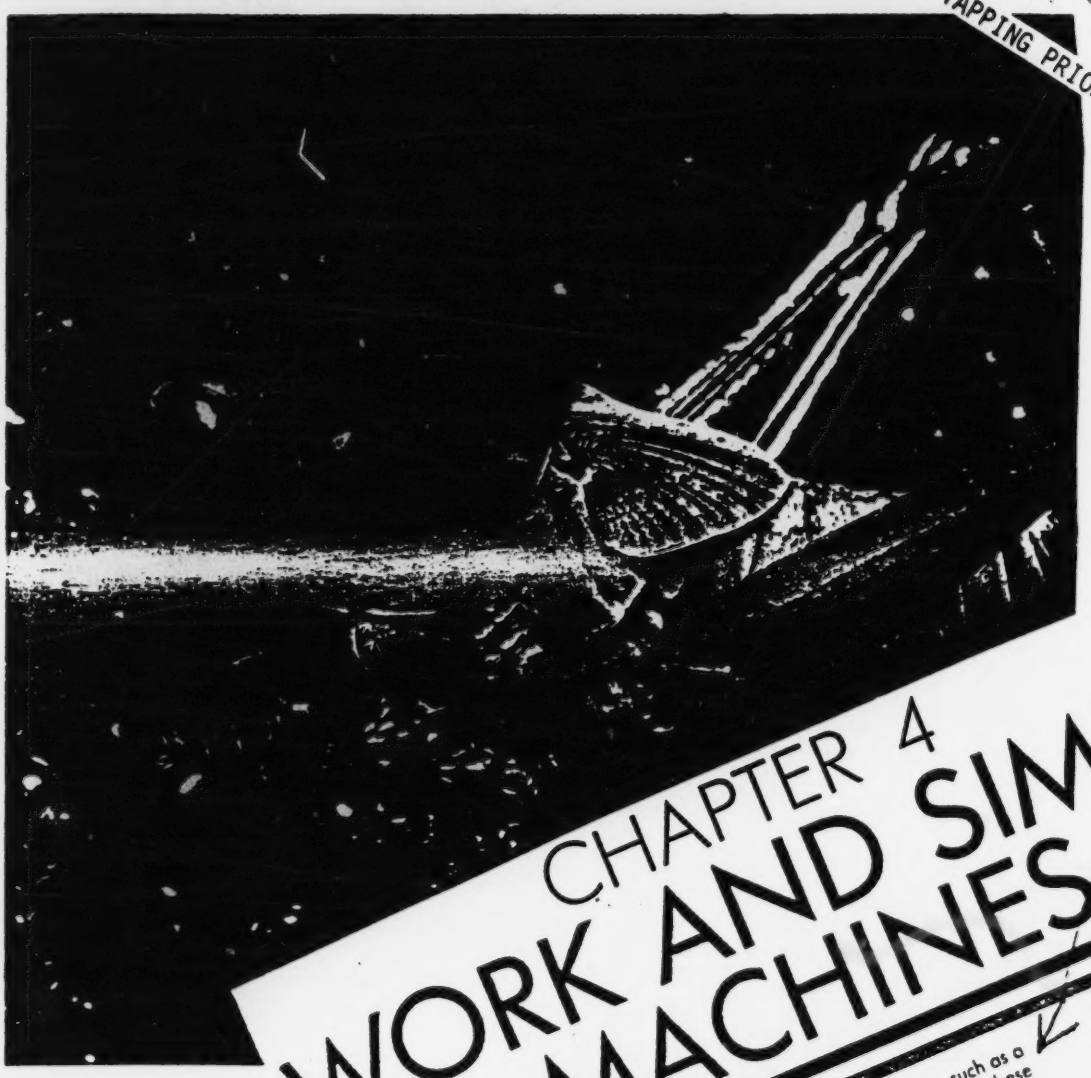
2. A NEW STYLE AND A NEW PARTY

If you were a young Kentucky boy or girl in 1824, you would certainly have heard of Andrew Jackson. Your older brother, already sporting his own Kentucky rifle, would be singing or humming the most popular song of the day, "The Hunters of Kentucky." The countless verses of this song told of Jackson's heroic victories in the Battle of New Orleans.

Your father would be about to cast his vote for Andy Jackson as President of the United States. For your father, and for hundreds of western farmers like him, "Old Hickory" was the symbol of a new era dawning. He was the perfect example of the "self-made man." That is why both his contemporaries and historians today call the period from 1824 to 1840 "The Age of Jackson."

Every time you cut a piece of paper with scissors or pry the lid off of a can, you are using a simple machine to make your work easier. The structures of many organisms include simple machines to help them function more efficiently. The rear legs of this grasshopper are examples of a third-class lever. What are simple machines? How does a machine make work easier? How are work and energy related?

TAPPING PRIOR INFORMATION



CHAPTER 4
WORK AND SIMPLE MACHINES

Introducing the Chapter: Begin this chapter by demonstrating machines such as a pair of scissors, tweezers, pencil sharpner, and doorknob. Explain that these machines, like all machines, are used to do work. Then go over the joule, the unit for measuring work. Have students make a list of machines and the kind of work they are used for. Review the differences between simple machines and compound machines composed of two or more simple machines. Have students discuss the advantages in using machines, use of machines in transportation, agriculture, manufacturing, and business, the importance of machines in modern civilization and the powering of machines by gasoline engines and electric motors.

Name _____ Date _____ Class _____

FINDING THE ANSWER 2

Have you ever tried to rearrange the furniture in a room? Perhaps you discovered that things would not fit where you thought they should. How could you avoid having this happen? One way is to make a drawing of your planned arrangement to see if things fit. Even so, how would you know your drawing was accurate? You could measure the room and the furniture in it and then make a drawing the same size as the room. However, this would not be very practical. A better solution would be to make a small drawing of the room, allowing 10 centimeters to represent 1 meter in the room. A drawing of this type is called a scale drawing. The ability to read and interpret scale drawings is an important skill.

Sometimes scale drawings represent objects smaller than the drawing. Examples include tiny electronic circuits and objects viewed under a microscope. More often, scale drawings are made to represent large objects. You may have seen plans for building useful objects printed in magazines. Floor plans of houses and blueprints for buildings are also scale drawings.

The most common scale drawings that people use are maps. In order to show an entire city, state, or country on a piece of paper of convenient size, it must be drawn to scale. This means that the map is drawn so that 1 centimeter represents a much greater distance. On a map of a small city, 1 centimeter

Name _____ Date _____ Class _____

AN INVESTIGATION OF SIMPLE MACHINES 9

How many different types of machines do you use every day? How many machines do you see in your classroom? Some of the machines in your classroom probably include a pencil sharpener, a door hinge, and a light switch. Look around and you will probably see other, more complicated machines. Machines can multiply forces that are applied to them. Therefore, they make your work easier. For a machine to increase a force, the machine must be moved through a greater distance. In other words, you trade a greater distance to apply less force. Every machine has a mechanical advantage (*MA*). The mechanical advantage is a number that tells how many times a machine multiplies a force.

Most of today's complicated machines are made of several simple machines working together. A compound machine, like a bicycle, consists of several different simple machines.

Name _____ Date _____ Class _____

SOUND WAVES AND PITCH 44

Sounds are produced when matter vibrates. You hear the buzz of a flying insect because its wings move. The music of a drum is produced when the drumhead vibrates back and forth. A person's voice is produced when the vocal cords vibrate. Sound is a compressional wave. In a compressional wave, matter vibrates in the same direction the wave travels. In order for you to hear a sound, the compressional wave must travel through matter, such as air molecules, to your ears.

Compressional waves have the same parts as a wave in a lake or light waves. The pitch of a sound is related to the frequency of a compressional wave. You are familiar with high pitches and low pitches in music, but people are able to hear a great range of pitches. People can hear sounds with frequencies between 25 and 20 000 hertz.

2. THE ARCHITECTS OF AMERICAN EXPANSIONISM

Highlighted only

VOCABULARY

Individual Americans played key roles in getting the new age of imperialism underway. Perhaps foremost among the leaders was **Theodore Roosevelt**, who was assistant secretary of the navy between 1897 and 1898. Roosevelt had a lot of help from an enthusiastic group of senators. Among them were **Henry Cabot Lodge** of Massachusetts and **Albert Beveridge** of Indiana. Another man who influenced this group greatly and who was a powerful influence all by himself was a naval officer by the name of **Alfred Thayer Mahan** [mə han′].

Communities were natural gathering places. They often grew up where two paths crossed or a path and river met. Farmers came there to **trade** their farm goods for other things they needed. People who had special skills gathered there to trade. They traded woven baskets, wood bowls, pottery, knives, and tools for farm goods.

The growth of communities meant that not everyone had to be a hunter or farmer.

trade, to exchange goods or services.

Students from the city's schools helped too. A teacher wrote: "Like thousands of others, I went downtown to help. And what did I see? Hundreds of students. They had come as **volunteers** to work in the sandbag lines. Some were even ready to risk their lives if necessary. I discovered that trouble can bring out the very best in folks."

Highlighted with definition offset

volunteer, a person who offers to help or work without pay.

The dikes held the river back. The city was saved. The people of Fort Wayne were proud. They learned how people in a community can help each other.

Highlighted with pronunciation guide

A **city** (\'sit-ē\) is a larger community than a village or town. Large numbers of people live and work in a city. Most cities have tall buildings and busy streets.

Look at the picture of a city on page 4. This picture was taken from an airplane flying over the city. There is also a map of the same city. Look at the picture and the map. Which one has symbols? Which one shows more about the city?

Highlighted, teacher explained

In order to orient oneself in space you need to know what direction you are headed. The same is true with maps. Point out that the *compass rose* "tells" the map reader what direction he or she is going. For more work with directions you may wish to review pages 21-26 in *Meeting Map Skills*. Also, you may wish to use *Advancing Map Skills*. See page 1, "Know Your Directions," Page 2, "Under Which Tree?" and page 3, "Is There a Top and Bottom?"

The map also has a drawing to show directions. A **compass** (\'kam-pəs\) **rose** helps you find north, south, east, and west on a map. Look at the compass rose. What is in the north part of the city? What is in the south? In what part of the city is the park?

There are other kinds of communities that are larger than cities. **States** and **countries** are larger than cities. States are made up of many towns, villages, and

Sample Lesson Plan, Places

- Ample time allotment is suggested.
- Vocabulary to be taught is identified.
- Interesting background information provides an invaluable aid.

Vocabulary highlighted, no teaching strategies provided

- Specific lesson objectives are stated involving both skills and content.

Lesson 24: Houston Specializes
TIME 1-2 days

BACKGROUND

Oil is a rich natural resource found near Houston. The oil from the surrounding area is brought to Houston where it is refined and made into many different petroleum products. Houston is a port city connected to the Gulf of Mexico by a canal. Much of the oil is shipped from Houston's port to other places. Today, Houston is one of America's leading industrial centers. Point out the pictures of Houston's harbor and a harbor oil refinery on page 106. Have the students explain why a harbor location would be important for an oil refinery. (It provides easy access to tankers shipping Houston's oil to other communities.) You may wish to have some students research the purpose and operations of a refinery, and report to the class.

VOCABULARY

harbor oil

OBJECTIVE

- Explain why Houston specializes.

TEACHING SUGGESTIONS

Motivation

Bring a small sample of oil to class. Let the students look at, smell, and touch it. Ask them to speculate about all the possible uses for this natural resource. Many students probably will know some of the more common uses of oil, such as for lubrication or for fuel for cars and trucks, but most students probably will not realize that oil in the form of petrochemicals is used to make textile and plastics. Encourage some students to research oil in an encyclopedia to find out more about its many uses.

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Definition inbedded in text

A crystal is a solid bounded by plane surfaces that has a definite shape due to its internal atomic arrangement. The positions of the atoms within the solid produce the visible shape of the crystal. Few crystals are perfect. When crystals start to form in a magma or a solution, they interfere with one another. Lacking room to grow, minerals harden into masses of tiny grains in which the internal crystalline form can be recognized only with a microscope. Sometimes X rays must be used to determine the internal patterns. Despite the fact that it may be difficult to observe, all minerals have definite internal atomic patterns in one of six possible crystal systems.

What produces the visible shape of a crystal?

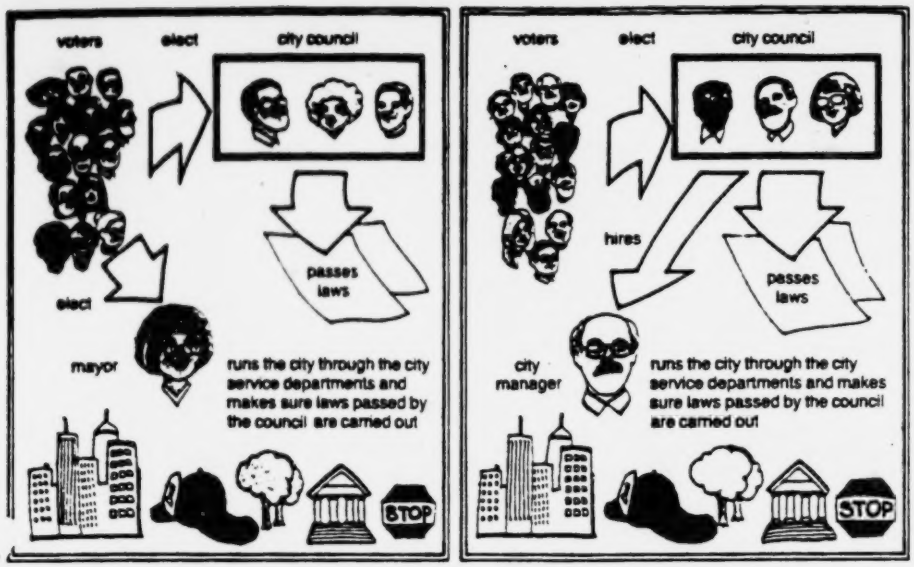
Background:
The word crystal is the English version of the Greek word for ice used to describe quartz. Gradually it was applied to all solids of polyhedral form.

Not highlighted, but defined

The six crystal systems are defined by three or four imaginary axes that intersect at the center of a perfect crystal. An axis is a straight line around which a crystal is symmetrical. The length of the axes and the angles at which they meet determine a crystal's external shape. Axes are usually drawn at right angles to pairs of faces of the crystal. A crystal face is a smooth surface that has a geometric shape and reflects the internal atomic arrangement. Look at Table 11–2. The first crystal system is the cubic system. The faces of this crystal are shaped like squares. There are three axes of equal length that meet at 90° angles to form a cube. Halite and magnetite occur as cubic crystals. Can you see the square faces and the axes that make them cubic?

How are the six crystal systems defined?

Background:
Substances like obsidian that cool too rapidly for normal geometric patterns to develop are called amorphous solids.



The mayor-council plan on the left and the council-manager plan on the right are both representative governments. Can you see advantages of one plan over the other?

Other cities have a **council-manager plan** of government. In this plan, the people elect a council. The council hires a city manager to run the city. The city manager does the same job as the mayor.

Look closely at the drawings showing the different kinds of city governments. How are all the plans alike? How are they different? Which plan does your community have?

Vocabulary graphically illustrated

Communities Around a City

Communities that lie right outside a city are called **suburbs**. Look at the map above. It shows a city and its suburbs. People living in the suburbs may go into the city to work. They may go to the city to shop or have fun. But they go outside the city, to their suburb, to live. There it is quieter and not so crowded. A city and its suburbs together are called an **urban area**.

Apprentices and Indentured Servants

To deal with the problem of labor scarcity, the colonists transformed the old English practice of **apprenticeship** into a major colonial economic institution. Apprenticeship worked as follows: A worker, usually a young boy or girl about 10 years old, was "bound," or contracted, to work for a master or mistress. Girls served until they were 16 or 18. Boys' terms were longer. In exchange for the child's labor, the master or mistress pledged to provide room, board, clothing, and an opportunity for the servant to learn the "mystery" of a special craft.

Colonial America continued the practice of apprenticeship. Benjamin Franklin began his career as a printer's apprentice. Paul Revere, a first-class silversmith, took on several young men as apprentices. But bound labor also grew to be much more than a system of vocational training. From the early 1600s to the Revolution, thousands of poor men and women became bound laborers, or **indentured servants**, for three to seven years in exchange for passage to America.

Definition imbedded in text

Reading Science

Although science study is thought of as one in which students conduct experiments and discover scientific data, the dissemination and acquisition of data among scientists is through the reading of printed materials. Thus, by reading, scientists are able to know the information their colleagues have discovered.

Science writing can be described as intense, precise, specific, and "jammed" with facts, among which are many interrelationships. This compact writing often presents difficulties to students, who in most cases, have learned to read by using more casual, narrative material. Specifically, students must master technical vocabulary representing scientific concepts. These concepts are in ascending order with new knowledge building on what has been learned. Thus, students must note not only the facts, but also the interrelationships among them. They must discern the organization of the information and learn to make critical interpretations and applications.

The text, ***Focus on Physical Science***, is designed to assist you in helping your students to read competently in the following ways.

1. The topical headings in each chapter are the author's organization of the information. Look at these in a preview before reading, and aid students in noting the development and progression of information.
2. Note the *Making Sure* questions and the blue margin notes throughout each chapter. Alert your students to the purpose of these questions so that their understanding of data can build progressively.
3. Emphasize that important science words appear in boldface type and are defined in context. Students also should be encouraged to use the *Glossary* as an aid to vocabulary development.
4. Use the *Focus on Skills* pages to help students achieve success in reading science. Skills presented in these features include understanding graphs and word problems, comparing and contrasting, classifying, reading science, and determining cause and effect.
5. The text has numerous graphic aids. Discuss information from these to give students practice in noting the information. These aids can be very helpful to a slow reader.
6. Use the end-of-chapter material for review, extension, enrichment, and skill application. The *Summary* lists the main ideas of the chapter. *Vocabulary* lists the important words from the chapter. *Questions for Review* are excellent for review and reinforcement. The *Ideas to Explore* and *Readings* are suggestions for extensions and enrichment.

If science is thought of as learning through discovery, then as a teacher you must make that possible by aiding students' development of a basic conceptual background and competence in the reading-study skills.

READING STRATEGIES FOR
Land of Promise

You could easily read most chapters in *Land of Promise* in one to two hours. Most high school students can read 250 words per minute. At that rate, you could read one page in four to five minutes, one chapter section in twelve to fifteen minutes, or one chapter in about an hour and a half.

However, reading any book with a lot of information, such as *Land of Promise*, calls for careful reading. Otherwise, you will only retain a few vague ideas and several unrelated facts. Good readers have strategies they use for getting meaning from reading. Ask yourself three strategy questions for each reading assignment:

1. What can I do to prepare myself to read the assignment?
2. What can I do to make sure I am understanding what I am reading?
3. What do I need to do after I read to remember more of what I read?

In other words, practice reading with specific pre-, during-, and post-reading strategies in mind.

Pre-Reading Strategies

- **Find the major actions in the assignment.** The major actions in a history book are signaled by verbs. Such action words as *reform*, *elect*, or *migrate* clue you to what happened in history. List the major actions down the middle of a piece of note paper before you start your careful reading. Then during your careful reading, find out *who* and *what* are involved in each action. Also find the result of each action.

- **Discover what you do and don't know already.** You have some information and attitudes about the topics in most of the chapters before you read. Draw two vertical lines on a sheet of paper to make three columns. Title each column: *Know Well*, *Know a Little*, *Need to Know More*. Read the headings in a chapter section, and decide how much you know about each heading. Write the heading in one of the three columns according to how much you know about each heading.

- **Predict what the authors will say.** Good readers anticipate what the authors will say about a topic. First read the headings within a chapter section. Imagine what information the authors will tell you about each heading. Then read the paragraphs to see if the authors met your expectations.

- **Decide before careful reading where to stop and think while reading.** Good readers can tell why some paragraphs look hard or easy before they read carefully. Read one or two sentences per paragraph. Ask yourself if you know any of the information. Plan to read carefully those paragraphs which contain information you do not know well. Avoid the temptation to re-read over and over the information you already know well.

During-Reading Strategies

- **Test your comprehension.** Commit yourself to understanding what you read when you first read the assigned pages. Avoid thinking that you will "learn this stuff later on." Select and read the first sentence in a few paragraphs. Add the word *because* at the end of the sentence, and complete the sentence in your mind. If you cannot complete the sentence, read the paragraph again.

- **Check the logical connections between and within paragraphs.** Look over what you just read, trying to find such cue words as *then*, *next*, *also*, and *on the other hand*. Tell what information comes before and after each cue word. If you find no cue words, imagine which cue words would fit logically between and within paragraphs.

- **Group information while reading.** Divide a sheet of paper into four equal parts with a horizontal line and a vertical line. Place these titles at the top of each part: *Causes*, *Effects*, *Definitions*, *Basic Facts*. Read the chapter section to find and list the causes under the *Causes* title. Then, read and list the effects, definitions, and basic facts.

Post-Reading Strategies

- **Condense and evaluate your reading.** Good readers state the ideas they read in their own words. Identify five or more ideas from a chapter section. Place each idea on its own 3 x 5 card. Sort the cards in three ways:
  a. Which idea do you remember reading first, second, and so forth? Check your sequence of the cards with the sequence of the ideas in the textbook. Tell why you think the authors arranged the ideas as they did.
  b. How do you evaluate the ideas? Sort the cards into three piles: Important, Somewhat Important, Of Little Importance. Think through why you sorted the cards as you did.
  c. Which ideas would you tell others? Select only those cards that contain ideas you would like to tell someone outside of your class. Think through why you chose the cards and how you would explain the ideas.

  This strategy helps you make your own connections between and among main ideas.

- **Interview key terms.** Several key terms appear at the end of each section. Imagine that each term is a living person, and interview the terms with probing questions:
  a. When did you exist? Do you exist today?
  b. Where can I find you?
  c. Who are your friends or enemies?
  d. What do you need in order to exist?
  e. How can I appreciate you more than I do?

  You may want to ask other questions too.

- **Judge the accuracy of what you read.** Find one or two other accounts of the information you read. See the recommended readings at the end of the chapter. Read the accounts to find how the information is similar or different from what you read in your textbook.

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INFORMATION CONTENT for READING Students

Integrating Skills

In science classes, students are traditionally expected to learn scientific facts. Textbooks are useful tools for helping students learn. However, the skills required to learn science may be different from the skills they use to learn other subjects. As a science teacher, your goal should be not only to teach the science content of your course, but also the processes needed to learn it.

The factual style of writing in science textbooks is different from the narrative style of most other books students read. Thus, reading science requires special skills. Students must adjust to the amount of factual information presented. They must read critically and sense relationships among ideas, as well as build on previous knowledge. Students must master a new, technical vocabulary. Skills are needed to use supplementary materials to enhance understanding. Students must learn to interpret information presented in tables, graphs, and diagrams.

Scientists are dependent upon communication and mathematics for furthering their knowledge. Balancing process with content is a practical approach to science instruction. The ***Focus on Earth Science: Review and Reinforcement Guide*** is designed to help students see the usefulness of various skills by learning and practicing them where they are needed.

The Types of Exercises in this Book

A textbook is a student's primary learning tool. For this reason this Guide begins with an inventory of ***Focus on Earth Science***. The inventory introduces the general structure of the textbook. Features such as the Glossary and Appendices are highlighted. The inventory also points out study aids and how to use them.

This Guide is organized to follow the chapter sequence in ***Focus on Earth Science***. Please note that the activities are designed as review material. They should be assigned after students have completed the appropriate reading in a chapter of their textbooks. Activities pertaining to vocabulary development will cover terms used throughout the chapter. Therefore, you should not assign these activities until students have read the whole chapter. Some activities review specific concepts. Suggestions about when to assign each activity are given in teacher annotations.

The activities in this Guide are designed to help the content area teacher teach reading and math skills as well as science. Activities designed to develop creativity are also included. The activities can be divided into four main categories.

Comprehension Skills

Comprehension is the ability to understand the meaning of the material in question. There are four basic levels of comprehension: the literal level, the interpretive level, the critical level, and the creative level. These four levels define a progressive development from a mere reproduction of fact to formulation of original ideas. In progressing through the various levels of comprehension a student is building a strong conceptual framework. Once the foundation is laid for this conceptual framework, the development of the other skill areas will be facilitated. For example, if a student has a basic understanding of the concepts presented in a particular chapter, new vocabulary words will be grasped more quickly from context clues. Problems and laboratory activities will also gain perspective.

Teaching Strategies

Several features within ***Focus on Earth Science*** are designed to help students develop a strong conceptual basis. Unit and chapter opening photographs and descriptions draw relationships between new material and real life situations. This feature helps students understand the importance of new concepts in their lives and stimulates their interest in the material. The goal statements at the beginning of each chapter focus on the major concepts that students will be learning. These goal statements put the new material into perspective. The section titles identify the concepts being covered. Student margin notes emphasize the major points presented in the text. The question format of many of the margin notes forces students to organize their thoughts, develop critical reading skills, and hence increase their level of comprehension. The activities are designed to demonstrate and reinforce new concepts. How and Why questions at the end of each chapter require students to explain or compare points discussed in the chapter. The Ideas to Explore and Readings sections provide additional activities and references for the interested student and aid in developing creative comprehension skills.

As you help your students master new concepts, there are several important points to keep in mind. Always try to proceed from an elementary or concrete level to a complex, abstract level when you present new material. This pattern follows the natural development of comprehension skills. Use simple explanations and demonstrations initially, then allow students to discuss alternate examples as their understanding and creativity grow. Instruct students to read critically. Have them practice using margin notes to increase their comprehension and to identify the major topics in the text. Encourage students to identify relationships between concepts. Brainstorming sessions may be a useful vehicle for introducing new concepts. When appropriate, have students report on further applications of new principles or recent developments using new concepts. This type of activity fosters their creative communication skills.

The comprehension activities in this Guide are intended to aid students in formulating strong conceptual backgrounds. The activities essentially focus on the four levels of comprehension.

Skills

1. Literal—reproduces factual data
   Objectives: a. notes factual data
   b. organizes data according to correct sequence or chronology
2. Interpretive—recognizes the significance of new material
   Objectives: a. identifies cause and effect relationships
   b. relates material in terms of part to whole
   c. compares and contrasts data
   d. draws conclusions from an analysis of material
   e. formulates generalizations based on conclusions
3. Critical—evaluates new material
   Objectives: a. identifies bias in the material presented
   b. evaluates adequacy of data
   c. determines validity of new material
4. Creative—uses new material to formulate original ideas
   Objectives: a. interprets data correctly based on given problem
   b. evaluates relative importance of material presented
   c. incorporates material from a variety of sources to solve a problem

Vocabulary Skills

Language enables people to communicate concepts. Words are mere labels for concepts. When a concept is understood and a label is provided, vocabulary is logically developed. In reading science, students are faced with three basic kinds of vocabulary: (1) general words with many meanings (e.g., model), (2) general words used in a scientific context (e.g., relief), and (3) technical words (e.g., quasar). The development of students' vocabularies contributes greatly to their comprehension of science concepts. As a science teacher, you can guide students in how to use the language of science to communicate concepts.

Teaching Strategies

Review the textbook, ***Focus on Earth Science***, and note the vocabulary aids provided. Point these out to students and discuss how to use them. Major science vocabulary words are highlighted in boldface type preceded or followed by their definitions. These words are also listed at the ends of the chapters. Unfamiliar words throughout the text are phonetically spelled to help students learn the correct pronunciations. A pronunciation guide is given on page 538. A Readings section at the end of each chapter lists additional books and articles for students to read. A Focus page designed to foster vocabulary skills is on page 18. The Glossary (pages 538–549) lists the major science words of the text, their definitions, and phonetic spellings of unfamiliar words. The Index (pages 553–560) lists major concepts and gives page references where the concepts are discussed.

When possible throughout the school year, show or demonstrate the concept represented when you introduce a new vocabulary word. Alternatively, use pictures, charts, and diagrams to illustrate word meanings. Review the textbook and other references for visual aids. When appropriate, explain technical words in terms of common words that students have experienced. Show enthusiasm for developing vocabulary. Develop a large vocabulary yourself and use it in the classroom. Go over correct pronunciations, spellings, and usage of new words with the class.

To develop vocabulary, students need to develop skills that involve more than learning definitions. Students must learn about the structure and function of words. They must understand the relationships among words. Students need to learn how to use the language of science in speaking and writing to communicate effectively. The vocabulary activities in this Guide focus on helping students develop these skills.

Skills

1. Word structure—analyzing words in terms of grammar and mechanics
   Objectives: a. spell each vocabulary word correctly
   b. interpret phonetic spellings of words and correctly pronounce them
   c. identify roots, prefixes, suffixes, and syllables in words
   d. identify vocabulary words as parts of speech
2. Word meaning—learning definitions of and relationships among words
   Objectives: a. define each vocabulary word in the scientific context of the chapter
   b. match each vocabulary word with its definition in a list of definitions
   c. contrast words with similar and different meanings
   d. outline the relationships among the vocabulary words in a chapter or unit
   e. locate each vocabulary word in an alphabetical listing of words (dictionary, glossary, index)
3. Word usage—communicating verbally (oral and written)
   Objectives: a. use each vocabulary word correctly in a definitive sentence
   b. explain the concept each vocabulary word represents
   c. use vocabulary words to discuss science concepts

Analytical Skills

The processes involved in analyzing data are complex. One reason for this complexity is students are expected to read and understand passages containing new science concepts expressed in quantitative terms. In other words, they are required to combine scientific and mathematical symbols into an efficient language system. Students must be able to think in this symbolic language in order to interpret the meaning of the problem, organize the data provided, perform the required manipulation, and interpret the results.

Teaching Strategies

Focus on Earth Science contains a variety of features designed to reinforce analytical skills. Making Sure questions serve as periodic reviews within each chapter. The various activities throughout each chapter are designed as demonstrations of the relationships described in the text. Tables of frequently used SI units and derived units can be found in the Appendix on page 524. The students' notes in the margin emphasize new

concepts. How and Why questions at the end of each chapter are a review of analytical skills covered within the chapter.

To analyze data accurately, students need to develop skills that involve more than calculating a correct answer using standard formulas. Students must learn how to logically evaluate a problem to determine the known and unknown variables. Measurements must be made and recorded accurately. Information must be clearly organized and displayed in graphs. Mathematical relationships must be understood in order to perform the calculations necessary to solve problems. These and other skills have been organized into the specific areas outlined below. The analytical activities in this Guide focus on developing these skills in students. In general, all analytical activities are designed to encourage students to use symbolic language and thought processes.

There are a variety of techniques you can incorporate into your teaching methods to help students develop analytical skills. For example, write formulas and relationships on the board or overhead projector in both word and symbol forms and have students read the equations aloud in class. Assist students in preparing a classroom chart that contains each new formula or relationship. Prepare a bulletin board on SI units and measuring techniques, or on the various types of graphs. Use the activities and demonstrations presented in the textbook to reinforce new concepts. Have students brainstorm to find alternate methods of testing or solving a problem. When appropriate, discuss with students situations in their lives that require analytical skills.

Skills

1. Measurement—use of SI units and measuring tools
   Objectives: a. identify and use SI units correctly
   b. convert between units
   c. use measuring instruments such as ruler, graduated cylinder, thermometer, and balance
2. Graphing—developing and interpreting graphs
   Objectives: a. identify relationships between variables
   b. select correct units for variables
   c. develop functional scales for displaying data
   d. accurately plot the data for each variable
   e. interpret data presented in graph form
3. Calculating—mathematical manipulations using standard equations
   Objectives: a. identify the known and unknown variables in the problem
   b. select the correct formula for the problem
   c. set up the formula using the variables in the problem
   d. perform the necessary mathematical functions to solve for answer
   e. express answer using correct units
4. Problem solving—logical analysis of a problem situation requiring integrated use of verbal, scientific, and mathematical skills
   Objectives: a. determine the parameters of the problem (i.e., what is the question)
   b. identify known and unknown variables
   c. estimate the answer
   d. establish a logical sequence of steps to determine the answer
   e. perform the steps in the specified order

Study Skills

Study skills are those skills used by students to learn assignments. But, learning science requires many skills that are not instinctual. Teaching study skills in science class helps increase students' acquisition of the content. Students not only learn science content, but they also see how to use the skills. The goal is to help students learn skills they will need to use when they must direct their own study efforts. Self-directed study, such as reports, group presentations, science fair projects, and laboratory investigations, are commonly assigned in science classes.

Teaching Strategies

Call students' attention to study aids in the textbook, ***Focus on Earth Science***, and discuss their uses. The Informal Reading Inventory on page iv familiarizes students with the features of the text. The To the Student page (iii) explains the purpose of the text features. The Table of Contents (pages v–1) provides a general outline of the content, listing unit, chapter, and section titles. Note the many graphic aids throughout the text, such as tables and maps. Photographs and illustrations are accompanied by captions. Activities are written with clear, step-by-step directions.

Focus pages that concentrate on study skills are found on pages 38, 84, 156, 198, and 240. The Appendices (pages 524–534) supply additional helpful information to students. The Index (pages 553–560) is a quick reference tool.

Explain the preview-question-read-review procedure for completing textbook assignments. When making assignments, preview the lesson with the class and help the students form purpose questions. Then encourage them to read, seeking the answers to these questions. Suggest that they review their reading, jotting down meaningful notes. Present methods of taking notes and outlining. When discussing lessons in class, write the main points on the chalkboard to guide students taking notes. Use graphic aids on overhead transparencies, posters, bulletin boards, and so on. Explain the interrelationship between graphic aids and language. Give clear, precise directions and answer questions about procedures before students begin activities. Discuss the importance of reading a set of directions thoroughly before beginning to perform each step. Enlist the help of a librarian in teaching students how to locate and use sources of information.

To develop independence in gaining information from various sources, students need to develop skills that involve more than reading. Students need to master skills of graphic interpretation. They need guided practice in reading to do research on a topic. They need to learn how to read and follow directions accurately. The study activities in this Guide are designed to help students develop these skills.

Skills

1. Methods of organization—improving acquisition of content
   Objectives: a. follow a preview-question-read-review procedure for completing textbook reading assignments
   b. explain the method of organization used in the textbook
   c. take orderly notes that are personally useful
   d. outline a chapter
   e. sequence a list of events
2. Use of graphic aids—interpreting information presented graphically
   Objectives: a. explain the purpose of graphic aids in the textbook
   b. derive information from graphs, tables, diagrams, and pictures
   c. use graphic aids to organize information in notes
3. Following directions—reading accurately
   Objectives: a. explain the importance of reading an entire set of directions before beginning to perform each step
   b. ask questions or look up words to clarify directions that are not understood
   c. perform each step of a given set of directions correctly

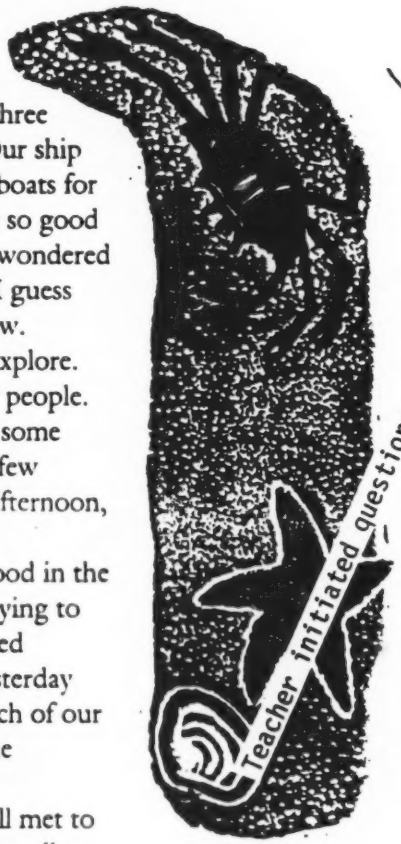
Lesson 1 (pp 119–121)
Suggested Teaching Time
2 days

Knowledge Objectives
Students will learn:
- that a newly formed community will discover that rules are necessary.
- that people disagree over the kinds of rules that are needed.

Skill Objectives
Students will learn how to:
- make a simple map key.
- distinguish between cultural (made by people) and natural features.
- infer from the text what problems shipwrecked sailors have.
- consider rules and how they apply in different situations.

Vocabulary
vote
law

Lesson 1 Starting from Scratch



Day 1 The storm lasted three days and three nights. I have never seen waves so huge. Our ship was smashed to bits. We held onto our lifeboats for a long time. Finally we spotted land. It felt so good to stand on solid ground. Many of us had wondered if we would ever know that feeling again. I guess this place—wherever it is—is home for now.

Day 2 The captain sent out a group to explore. We are on a small island. No signs of other people. There is little food—a few coconut palms, some banana trees. We've seen some birds and a few monkeys, no other animals. It rained this afternoon, just as it did yesterday.

Day 5 All of us have been hunting for food in the mornings. In the afternoons, we've been trying to gather things to make houses. We badly need protection from this never-ending rain. Yesterday and today we returned to camp to find much of our food gone. Captain Fraser thinks maybe the monkeys are stealing it.

Day 10 Food still disappearing. So we all met to decide what to do. Captain Fraser had a plan all worked out. He divided us into four groups. One group is to gather food. Another is to build houses. One group is to stay at camp to watch the food. A fourth is to build a fire to signal passing ships.

Day 15 The signal people went swimming and let the fire go out. It was hard to start the fire again. The firewood was wet from the afternoon rain.

Day 25 Trouble today. The group that gathers food took time out to explore some caves. They didn't bring back enough food. Many of us went

119

Preliminary Activity
Remind students of the game they played and ask again: *Why did we need rules?* Have students tell other kinds of rules that they live with every day, and list these on the board. Next to each kind of rule, write students' brief statement of why it is necessary. (Library rules—to make books available to everyone; bedtime rules—for child's health; street-crossing rules—for safety.)

Developing the Lesson
After students have read through Day 10 on page 119, discuss the situation. Say: *What problems did these people have?* (food, shelter) *Was Captain Fraser's plan fair?* (Students should recognize that Captain Fraser was making rules without the consent of the rule-followers.) *Did it work? What went wrong?* (It didn't work because people didn't have a voice in the rule making.) Then have students read the rest of the lesson, and discuss answers to the questions in the text.

Have students write two more entries in the sailor's journal suggesting how the islanders could solve their problems. Share these by reading them aloud.

To help students apply their understanding of rule making and reasons for rules, write the following questions on the board.

Lesson 2 (pp 140–141)
Suggested Teaching Time
1 day

Knowledge Objectives
Students will learn:
- that the Constitution protects certain rights.
- that as citizens they have the responsibility of voting, informing themselves about public issues, and learning about the structure of local, state, and national governments.

Skill Objectives
Students will learn how to:
- identify the rights and freedoms protected by the Constitution.
- make a chart showing rights and responsibilities.
- use their imagination to guess the effects on a community of unconcerned or nonvoting citizens.
- identify rights and responsibilities that are standard

Vocabulary
amendment

Preliminary Activity
Review the meaning of constitution—a plan of government. Read aloud the first paragraph and ask: *What were the first changes added to the Constitution, and why were they made?* (The first amendments described rights and freedoms of the people. Some had worried that the Constitution hadn't told them clearly enough.) Say: *Read to find out what rights the changes described.*

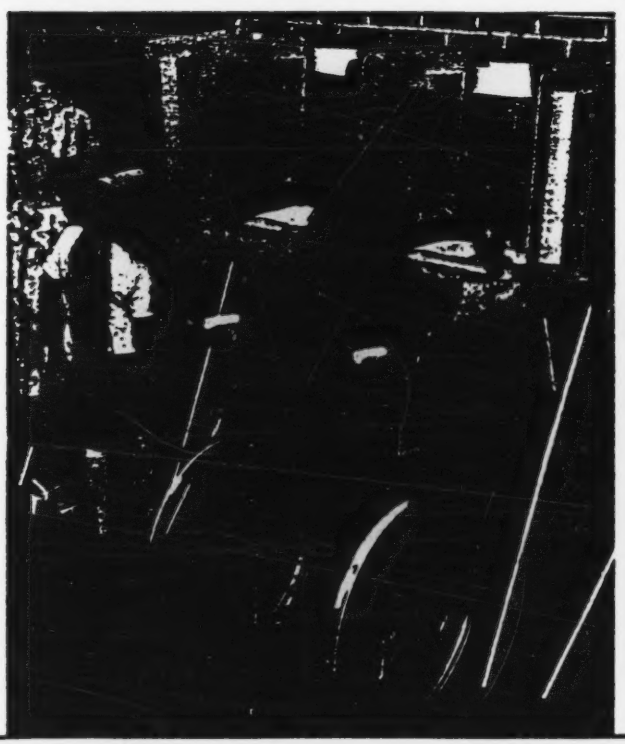
Developing the Lesson
After students have read the next two paragraphs, have them enter on their chart of "Rights" started in Lesson 1 those included in the Bill of Rights. With each one, discuss what it would be like *not* to have such a right. For example, people could not meet together to do community jobs or try to change things, as Aileen Hernandez and her group did. People couldn't speak or publish their opinions about things.

Answer to caption:
Voting is a right because it allows people to make the laws they will have to follow. People must assume the responsibility; otherwise they leave government in the hands of a few and relinquish their right.

Lesson 2 Rights and Responsibilities of Citizens

The Constitution writers knew that as time goes on things change. So they set up a way for the people to make changes in the Constitution. In fact, ten changes, or **amendments**, were added to the Constitution right away. At times in our past, people had been without certain rights. Their experiences made them feel strongly about the rights they should have. The first ten amendments described the rights and freedoms of the people.

The first amendment protects people's right to worship as they please. It also says they have a right to get together in groups. They can say or write anything they want as long as they don't hurt



These people are using their rights and responsibilities. How is voting both a right and a responsibility for Americans?

1:4 Theories and Laws

What is a scientific theory?

What is a scientific law?

Background:
Scientific laws can be as simple as the fact that water runs downhill or that dropped objects fall to Earth. The theory of universal gravitation explains these laws.

Questions offset

Teaching Suggestion:
Be sure the distinction between theory and law is clear to students. Theories do not become laws over time.

[redacted] For example, there are several theories to explain how different birds find their way when they travel. One theory is that they use the earth's magnetic field. Another is that they use the sun as a guide. Birds that travel long distances may be guided by the location of the stars.

[redacted] Laws are based on many observations by many people. The following is a law. When a hot object is placed in a cold area, the object always becomes cooler while the surroundings become warmer. Scientists have developed theories of heat transfer to explain why this occurs.

Theories and laws can be changed. If new observations show a theory or law to be wrong, it is changed or discarded. For example, at one time there was a scientific law that stated, "Matter can neither be created nor destroyed." New observations have shown this statement is not correct. Under certain conditions, matter changes to energy. The law was changed to account for the new observations.

23:4 Nonmetallic Deposits

Where do nonmetallic minerals occur?

What nonmetallic minerals are found in high-temperature vein deposits?

Background:
A major source of sulfur, especially in the coastal sediments of Texas and Louisiana, is in the caprock of salt dome structures. These structures produce about 4 million tons of sulfur annually.

What nonmetallic materials are used by the construction industry?

Nonmetallic deposits are useful products from Earth's crust that contain no metals. Some of these ores are rocks, others are minerals. Many of the nonmetallic materials are mined and used without much processing. At least 35 nonmetallic materials are necessary to industry.

Nonmetallic minerals may occur in vein, contact metamorphic, igneous, or sedimentary ore deposits. Nonmetallic minerals such as travertine ($CaCO_3$) may become concentrated by circulating groundwater. Graphite and talc are nonmetallic minerals associated with metamorphic deposits. Common uses for graphite are as pencil "lead" and as industrial lubricants. Talc is used in powders and face creams, and in dinnerware.

Nonmetallic high-temperature vein minerals include quartz, mica, and fluorite. However, depending on the composition of the deposit, quartz and fluorite can be mined as ore, or disposed of as gangue. Quartz crystals are used in optics and in radio and telephone operations. Fluorite is used in making prisms and in toothpastes.

Sulfur is a nonmetallic mineral deposit associated with volcanic eruptions in Japan and Mexico, with certain sulfur-reducing bacteria in Sicily, and with caprocks of salt domes along the Gulf Coast of the United States. Sulfur is used in fertilizers, pigments, explosives, and insecticides. Other nonmetallic deposits include sandstone, limestone, gypsum, and marble. These materials are used in building and construction. Millions of metric tons of sand, gravel, limestone, and clay are used by the construction industry. Sand, gravel, and limestone are used to make concrete and cement. Sand also is used to make glass and computer parts.

Questions at end of section

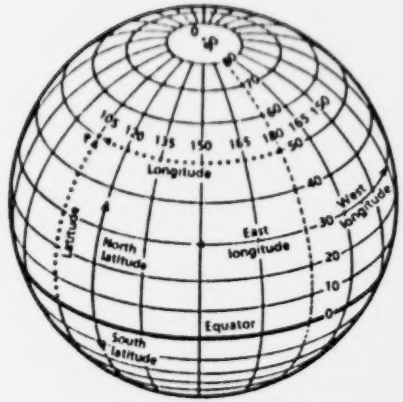


FIGURE 2–8. Latitude and longitude are used to locate points on Earth. Point P is located at 75° west longitude and 50° north latitude.

Greenwich, England, and represents 0° longitude. The east and west longitude lines meet at the 180° meridian, the **International Date Line.** The International Date Line is directly opposite Greenwich on the other side of Earth. Points west of the prime meridian have west longitude. Points east of the prime meridian have east longitude. Warsaw, Poland, has a longitude of about 20° east. What is the longitude of Cairo, Egypt?

Background:
The longitude of Cairo is approximately 32° east longitude.

As you have seen, latitude and longitude lines form a grid system that can be used to locate places on Earth's surface. Now, using latitude and longitude, identify your approximate location on Earth's surface.

Making Sure

6. Identify the locations of these three cities on a globe using latitude and longitude: Tokyo, Japan; Paris, France; Rio de Janeiro, Brazil.
7. On a globe, how many degrees does each line of latitude represent? Each meridian of longitude?

6. Tokyo, Japan: 36°N, 140°E
Paris, France: 49°N, 2°E
Rio de Janeiro, Brazil: 23°S, 43°W
7. Answers will vary depending on the globe used. Most commonly, globes will show latitude lines each 10° and longitude lines each 15°.

Teaching Suggestion:
Demonstrate this concept using a bright light and a rotating globe. Point out that noon, midnight, 6 p.m., and 6 a.m. remain stationary with regard to the sun, while positions on Earth's surface rotate toward or away from a specific time.

2:4 Earth Time

The time of day or night at any point on Earth's surface depends on the relationship of the longitude position of that point to the position of the sun. You know that Earth's surface is divided by lines representing latitude and longitude. Circles of longitude divide Earth into 24 units, each unit being 15° wide (15° × 24 = 360°). For each 15° of longitude, there is a one-hour difference in time from the previous meridian. At the 180° meridian, or International Date Line, one day is skipped going west across the line, and one day is added going east across the line. Can you tell why? Assume that you leave the prime meridian at midnight May 2 flying west at 1600 kilometers per hour. If you fly along a latitude line where Earth's circumference measures 38 400 kilometers, how many hours will it take you to return to your starting point? On what date and at what time will you arrive?

How wide is each time zone?

Enrichment:
It will take 24 hours to complete the trip. You will arrive at midnight on May 3, assuming you skipped a day when crossing the International Date Line.

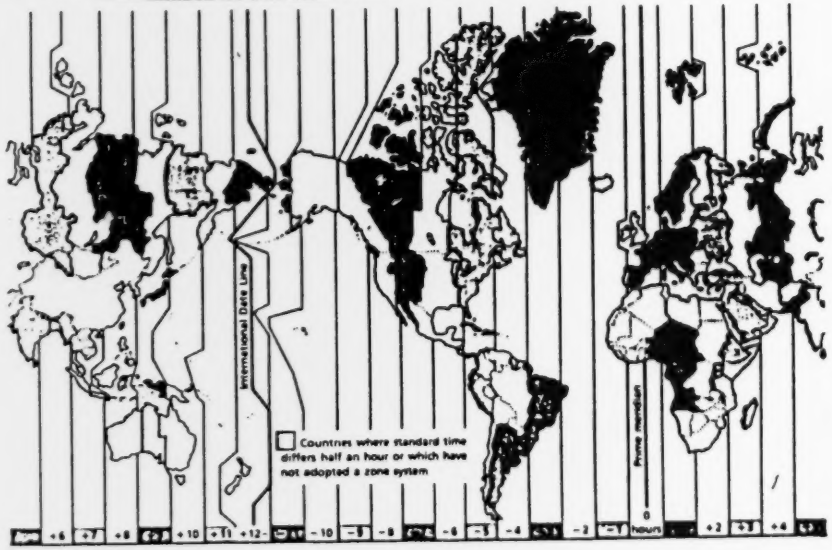
8. 6:00 A.M.
9. 2:00 A.M. on Tuesday

Making Sure

Use Figure 2–9 to answer the following questions.

8. If it is 9:00 A.M. in Florida, what time is it in Utah?
9. If it is 8:00 P.M. on Monday in Minneapolis, what time and day is it in London, England?

FIGURE 2–9. Time zones are roughly determined by lines of longitude.



MAP SKILL

Using encyclopedias and other sources, help the students locate oil-producing areas on a world map.

CURRENT EVENTS

The energy crisis is a recurring problem. Help students see the role oil plays in their community's energy needs through newspaper and magazine articles.

Distribute newspaper articles about two or three community issues and assign a group of students to study each issue. Each group should define the issue and identify the positions taken by different interest groups.

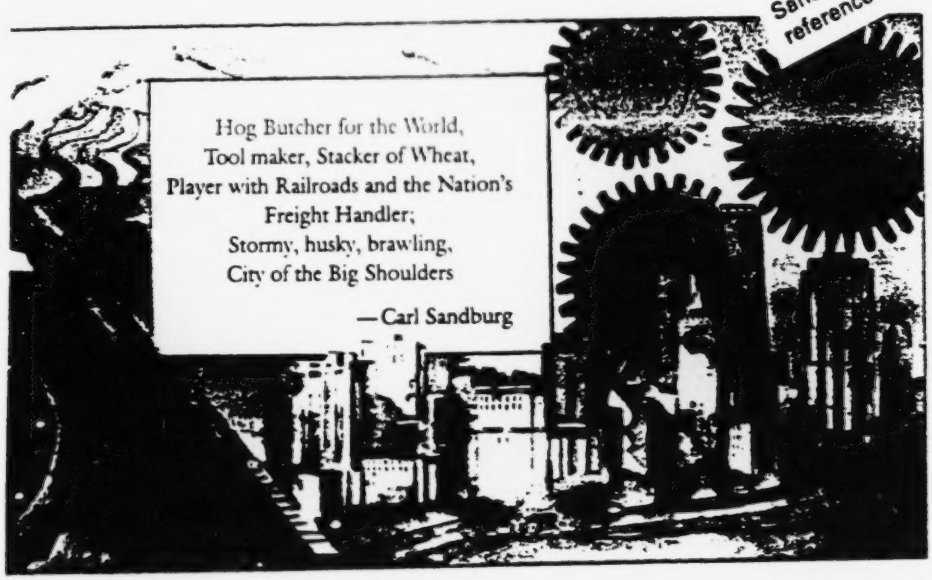
Provide a collection of news magazines and newspapers. Have small groups of students search to find stories of other community disasters (for example, the eruption of Mt. St. Helens, mudslides in California, forest fires). Have students clip a photo or

CURRENT EVENTS

Have the students check food prices in a local newspaper (parents can help with this) to determine how much of their weekly food budget is spent on food.

Carl Sandburg was a famous poet who lived in Chicago. He wrote a poem about his city. Here is the beginning of his poem. See how many names Carl Sandburg gave his city:

Obtain the complete text of Sandburg's poem for further reference.



Hog Butcher for the World,
Tool maker, Stacker of Wheat,
Player with Railroads and the Nation's
Freight Handler;
Stormy, husky, brawling,
City of the Big Shoulders

—Carl Sandburg

SUGGESTED ACTIVITIES

1. Have students find pictures in magazines that show holiday customs. These pictures can be mounted on colorful construction paper and displayed around the room.
2. Have students research the origins of holiday customs.

CURRENT EVENTS

Have students bring in newspaper stories about holiday customs.

CURRENT EVENTS

To ensure that the students do not reach the erroneous conclusion that everyone in the Netherlands always wears wooden shoes, have the class collect pictures from magazines like *National Geographic* that depict Dutch people wearing a variety of clothing, including different types of shoes. Have the students search for pictures that illustrate divergence within cultures.

CHAPTER 2
VIEWS OF EARTH

Introducing the Chapter: Before beginning Section 2:1 allow students a few minutes to sketch a map of their neighborhoods on a sheet of paper. When maps are completed have students exchange their maps with other class members. Permit students to compare and contrast at least three or four maps. After examining the maps, students should realize the need for a uniform system of representing features of Earth's surface. This exercise should also lead students to understand the importance of observing accurately in order to communicate information. Before earth scientists can communicate ideas about the world effectively, they must be able to view the world accurately.

2:1 Viewpoints

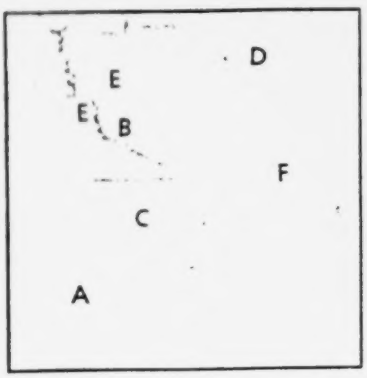
Images like the one shown on page 22 are giving us a new perspective on Earth. This image was taken by the Landsat satellite from an altitude of 917 kilometers above the San Francisco Bay area. Information received from satellites enables earth scientists to identify and study Earth's resources from space.

Figure 2–1 is a location map showing several features that can be identified in the San Francisco Bay area Landsat image. Landsat's sensors produce images using visible light and heat. Therefore, many surface features appear in unusual colors that scientists use to identify populated areas, cropland, forests, deserts, and many other features. Use Figure 2–1 to help you locate the following features on the Landsat image. Deep water (A) appears black or dark blue. Shallow water (B) is light blue. Most vegetation (C) appears red or pink, and the red checkerboard area (D) indicates farmland. Gray or blue-gray areas (E) are towns and cities. Areas with little vegetation (F) may appear as a light blue or tan. Figure 2–2 is a much closer view of one area shown in the Landsat image. Can you locate any features in this photograph that are also found in the Landsat image?

GOALS:

1. You will learn how scientists use models.
2. You will learn to recognize some features on a topographic map.

FIGURE 2–1. Outline map of the San Francisco Bay area.



All measurements include a unit of measure and a number identifying how many of the units are present. For example, if someone asked you how much sleep you got last night, you would use both a unit and a number to reply. If you said that you slept eight hours, the unit of measure is hours, and eight is the number of these units. When making measurements, you must select a system of units to identify the measurements. One such system of units is the **International System**, or **SI**.

What two components compose a measurement?

SI is used by most people of the world and all scientists. It is based on a decimal system similar to the money system of the United States. Thus, the units are based on ten and multiples of ten. The system was used first in France about 1790. Now SI is the standard system of measurement used in international trade.

You have seen many examples of SI units of measure. A milk carton gives the volume in milliliters. A bread loaf wrapper lists mass in grams. Some highway signs give distances in kilometers. The speedometers of most cars also give the speed in kilometers per hour. Can you think of other SI measurements?

FIGURE 3–18. When the ball is kicked, the force of the ball on the foot and the foot on the ball are equal.

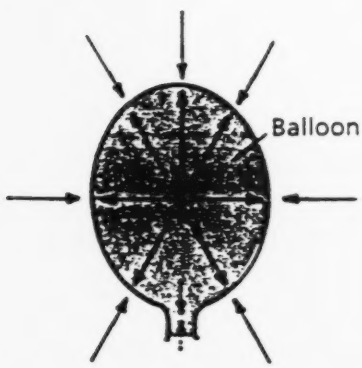


FIGURE 3–19. The forward force of the air on the wall of the balloon pushes it forward.

Case I

When you kick a ball, there is a pair of action-reaction forces between your foot and the ball. Consider the accelerations given to each object. According to Newton's second law, acceleration equals force divided by mass. The backward acceleration produced by the force of the ball on your foot and body will be tiny, and your body will hardly move. However, the ball's mass is small. The forward force produced by your foot will give a large acceleration to the ball.

Case II

A student inflates a toy balloon. The balloon is released and flies through the air. What makes the balloon move? Air is pushed out of the neck of the balloon by an action force. This force is produced by the contraction of the stretched balloon. The action force is accompanied by the reaction force of the enclosed air pushing on the inside of the balloon. The reaction force pushing forward on the wall opposite the neck of the balloon is greater than the backward force against the opening of the neck (Figure 3–19). This net forward force causes the balloon to fly forward.

Case III

Think about shooting a spring-loaded dart gun. When the gun is fired, the squeezed spring pushes forward on the dart and back on the gun. There are two action-reaction pairs of forces involved. One pair is the spring-dart and dart-spring pair. The other is the spring-gun and gun-spring pair. Each of these pairs is equal but opposite. The dart flies because the spring produces a forward force on it greater than air resistance. You move very little because your inertia is greater than the force exerted on you by the spring.

Through a process called remote sensing, scientists use satellites to observe Earth's surface. Some satellite images, such as the one below, are used to make maps showing land usage. What produced the unusual colors on this image? How would such a map be used? When you think of a map, you probably think of a road map. What are some other types of maps? How are they used to study Earth?

FIGURE 2–2. This aerial photograph of the San Francisco Bay area shows more detail than a satellite image.

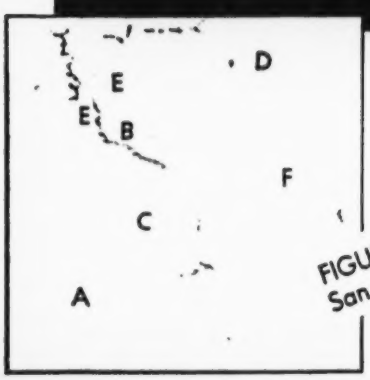


FIGURE 2–1. Outline map of the San Francisco Bay area.

[redacted] did some Americans support a high tariff?
[redacted] did others oppose it?
[redacted] did Benjamin Harrison's administration
[redacted] from that of Grover Cleveland?

Questions

Procedure

CAUTION: *HCl and NaOH can cause burns; handle with care. Wash spills with plenty of water. Wear safety goggles and an apron. Carry out in a well-ventilated area.*

1. With tongs, hold one sample of each fabric over the burner flame. Observe what happens. Remove sample from flame. Record which samples continue to burn. Estimate the time it takes for each sample to burn completely. **CAUTION:** *Be careful when using an open flame.*
2. Put a second sample of each fabric in a test tube containing 5 mL of dilute hydrochloric acid. Wait 5 minutes. Record your observations.
3. Put a third sample of each fabric in a test tube containing 5 mL of sodium hydroxide solution. Wait 5 minutes. Record your observations.
4. Gently heat the test tubes from Step 3 in a hot water bath. Record any changes that you observe.

Observations

Ask: *Are any of these communities like yours? Which one? How is it like yours? How is it different? How are the others different?"*

SUGGESTED ACTIVITIES

1. Ask: *How are the communities around the world similar?* Have students offer as many suggestions as possible. Write these on chart paper. After about half the communities in the book have been studied, somewhere near the middle of the school year, bring out the original suggestions listed. Have the students add to the list. Keep the ch[illegible] near the end of the [illegible] the class add to t[illegible] students should [illegible] generalizations ab[illegible] around the world a[illegible] mention key conc[illegible] each of the uni[illegible] everywhere must [illegible] needs; communitie[illegible] ment; communities [illegible] for their members

Discussions

Using a map of your own state, point out the boundaries that separate it from other states. Indicate both natural boundaries and those created by people. Study the boundaries of other states to see which are natural and which were created. Point out that the boundaries of the original thirteen colonies are generally irregular, following visible natural geographic features. The boundaries of states such as Colorado, Utah, Arizona, and Idaho, which became part of the United States in the late 19th and early 20th centuries, were drawn by the federal government and are generally visible only as straight lines drawn on a map.

Procedure

Part A. Vibrations

1. Hold a ruler on your tabletop so it hangs over the edge. Hold the end of the ruler tightly on the tabletop.
2. Snap the free end of the ruler allowing it to vibrate. Vary the length of the free end of the ruler to create vibrations of different frequencies. Note the changes in pitch and the approximate number of vibrations of the ruler. Record your observations.

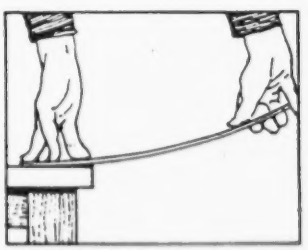


FIGURE 44–1.

Part B. Pitch of Sounds

1. Obtain 4 rubber bands of equal length. Each rubber band should be a different thickness. Stretch the rubber bands around a box as shown in Figure 44–2.
2. Pluck each rubber band and note the pitch. Record your observations about variations in pitch.
3. Hold a rubber band tightly in the middle. Pluck the rubber band on either side of the position you are holding. Change your holding position to increase and decrease the length of the vibrating rubber band. Record your observations about length of the vibrating rubber band and pitch.

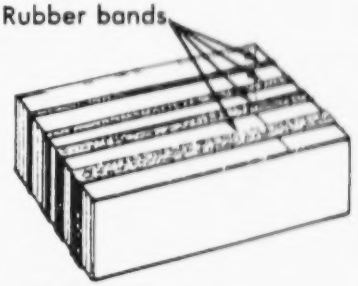
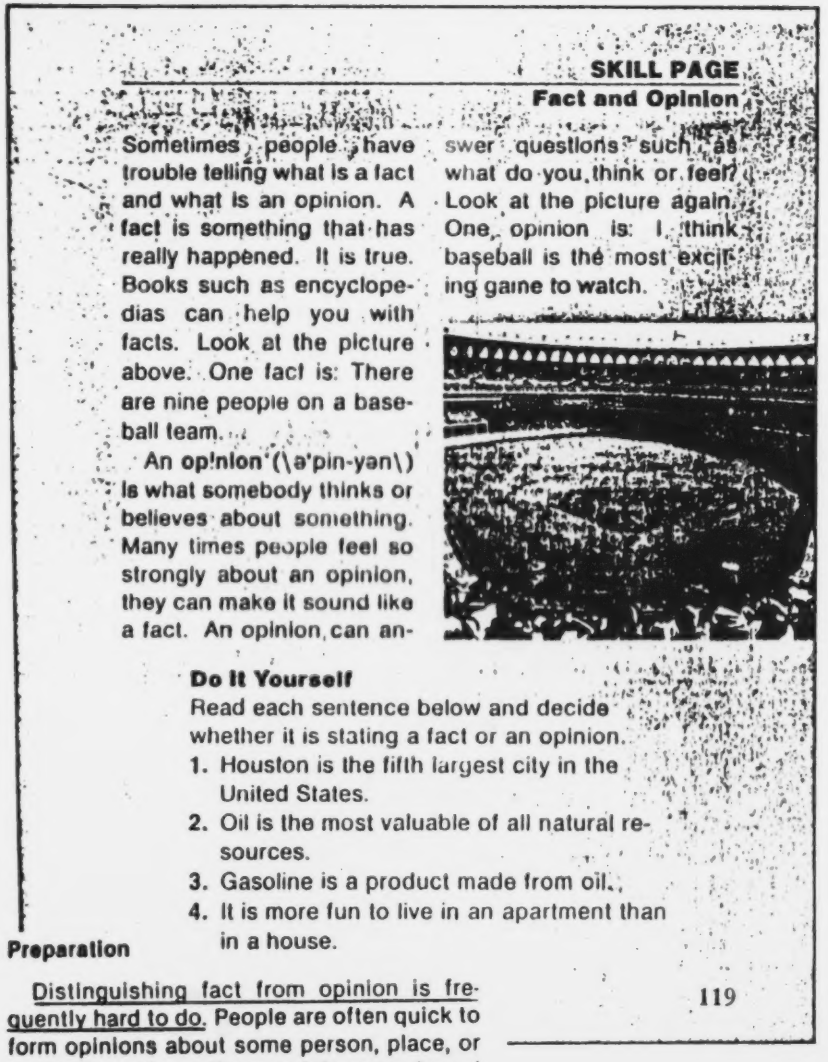


FIGURE 44–2.

You may demonstrate variations in pitch in a similar way with a guitar or violin.



SKILL PAGE

Fact and Opinion

Sometimes people have trouble telling what is a fact and what is an opinion. A fact is something that has really happened. It is true. Books such as encyclopedias can help you with facts. Look at the picture above. One fact is: There are nine people on a baseball team.

An opinion (\ə'pin-yən\) is what somebody thinks or believes about something. Many times people feel so strongly about an opinion, they can make it sound like a fact. An opinion can answer questions such as what do you think or feel? Look at the picture again. One opinion is: I think baseball is the most exciting game to watch.

Do It Yourself

Read each sentence below and decide whether it is stating a fact or an opinion.

1. Houston is the fifth largest city in the United States.
2. Oil is the most valuable of all natural resources.
3. Gasoline is a product made from oil.
4. It is more fun to live in an apartment than in a house.

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Preparation

Distinguishing fact from opinion is frequently hard to do. People are often quick to form opinions about some person, place, or event. Sometimes these opinions are based more on what others say than on the facts. Ask the students to think of situations when they and their friends reached hasty opinions. For example, they might decide that a child was a poor athlete because of his or her small size, when in fact the child was a very good athlete.

Using commonplace events that occur in the school, make a variety of statements and have the students classify each as fact or fiction, giving reasons for their classification.

Preparation

Before the children read *An Indian Legend,* you may want to tell them a story that they already know. Some description of a familiar scene or event will be appropriate. As you tell the story, however, introduce some obvious exaggerations or mistatements. The children will also be learning to distinguish fact from fiction.

After reading the legend, some children may suggest that water from a single rain would not be enough to cover a high mountain, nor is there any scientific evidence that people can turn to stone.

SKILL PAGE

An Indian Legend

A **legend** (\'lej-ənd\) is a story that has come down from earlier times. It is often based on something that really happened. But as the story is retold, some things that did not really happen may be added.

This story is a legend told by the Indians of the Salt River Valley.

Long ago, black clouds filled the sky above the Salt River Valley. Lightning flashed and thunder roared.

The people watched with growing fear.

"Some great disaster is coming," cried their leader. "We must flee to Crooked Mountain!"

Just as the people reached the mountain, heavy rain began to beat down. Water rose below their feet. They climbed to escape the rising water.

Finally the people reached the top. They called on their leader to use magic to save them from drowning. He saw there was just one way.

"Rise, O mighty water, rise," he shouted. "We turn to stone."

Everyone did turn to stone. They became part of Crooked Mountain.

Today, Crooked Mountain is called Superstition Mountain. Some people say that you can still see the people carved in it.

Do It Yourself

See if you can find a legend about your community. Which parts tell things that are true about the community? Which things did not really happen?

79

Consumer Concerns:
Buyer Beware (p 203)
Suggested Teaching Time
1 day

Objectives
Students will learn:
- to read a label.
- what the Fair Packaging and Labeling Act requires.
- how to determine the main ingredient in a package from the label.

Teaching Suggestions
List a few products on the board, such as dry cereal, hot dogs, fruit drink, shirt, sweater. For each one, ask students what manufacturers might claim about the product if they could say anything they wanted to. (Enjoy the humorous comments too.) Help students realize that the claims might range from the misleading ("Never wrinkles!" "Sweetest and tastiest!") to the inaccurate and untruthful (inaccurate weight on a package; claim that an item is made of all natural fibers when it is not).

Then ask: *Why do you think it was necessary to pass the Fair Packaging and Labeling Act? What problems do you think buyers had before the Act existed? How would you know what was in a can or package if you could not believe its label?*

Review with students the requirements for all labels. Then have them look at the labels of their coats, sweaters, shirts, or any accessible article of clothing. Do their labels comply with the Fair Packaging and Labeling Act? Could their labels have been easier to read or better placed? Students may observe that many clothing labels include also instructions for laundering.

Bring to class (or have students bring) a collection of food boxes and cans. Have small groups of students read the labels and report on each product. They should tell the product name and the main ingredients as shown on the label. In each case ask: *Does the name reflect the most common ingredient? If not, what should this product be called?*

CONSUMER CONCERNS

BUYER BEWARE

In early communities, when people traded or bought goods, there were no guarantees of quality. Today things are different.

The next time you're getting ready for school take a look in the collar of your shirt or sweater. Do you know what material your shirt or sweater is made of? You should. That's the law!

According to the Fair Packaging and Labeling Act, there must be a label on all the food and clothing we buy. The label must be printed so people can read it. It must be placed where people can find it easily. It must tell what is in the product.

The law also says that labels must provide honest information about the product. For example, the true size and weight of the product must be marked on the package.

The law also says that the labels of some food products must contain a list of ingredients, or what the product is made of. The ingredients must be listed in the order of the amount contained in the product.

Look at the list of ingredients below. They appear on the side of a breakfast cereal box. The cereal is called a "wheat" cereal. So you would expect wheat to be the first ingredient on the list, right?

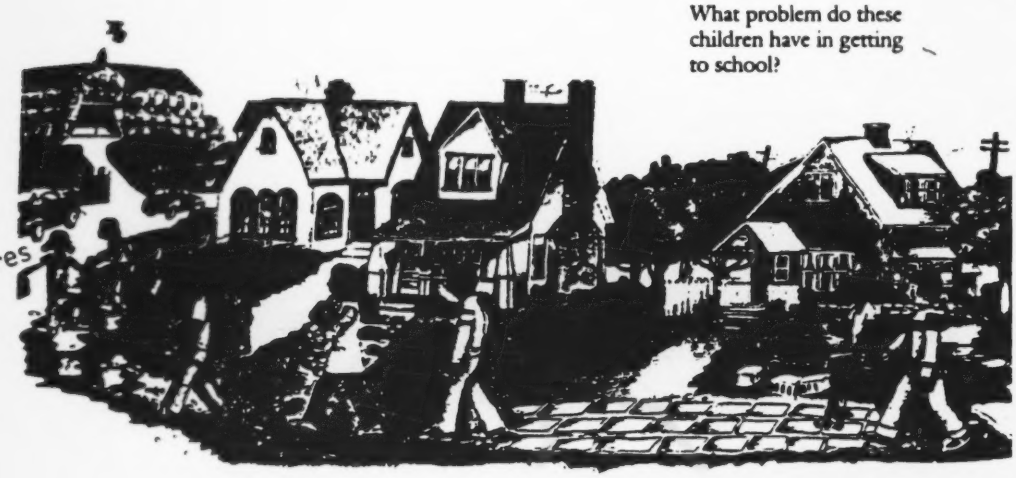
Wrong. Sugar is the first ingredient. That means that this cereal has more sugar than wheat in it.

Check the ingredient lists on the products you buy the next time you visit your grocery store.

INGREDIENTS: SUGAR, WHEAT, CORN SYRUP, PARTIALLY HYDROGENATED SOYBEAN OIL, HONEY, SALT, CARAMEL COLORING, SODIUM ACETATE, SODIUM ASCORBATE (C), VITAMIN A PALMITATE, NIACINAMIDE, REDUCED IRON, LECITHIN, PYRIDOXINE HYDROCHLORIDE (B_6), RIBOFLAVIN (B_2), THIAMIN HYDROCHLORIDE (B_1), FOLIC ACID AND VITAMIN D_2.

NUTRITION INFORMATION PER SERVING
Serving Size: 1 ounce (about 1 cup)
Servings per Container: 12

	1 oz PEP POPS	plus ½ cup vit. D Milk
Calories	110	190
Protein, grams	3 g	7
Carbohydrate grams	23 g	29
Fat, grams	1 g	5
Percentage of U.S. Recommended Daily Allowances (U.S. RDA)		
Protein	4 %	10 %
Vitamin A	25 %	30 %
Vitamin C	25 %	25 %
Thiamin	25 %	30 %
Riboflavin	25 %	35 %



From pictures

Development

You may want students to read the case study aloud, assigning them the appropriate lines for the different members of the Charles family. Encourage the class to read with expression.

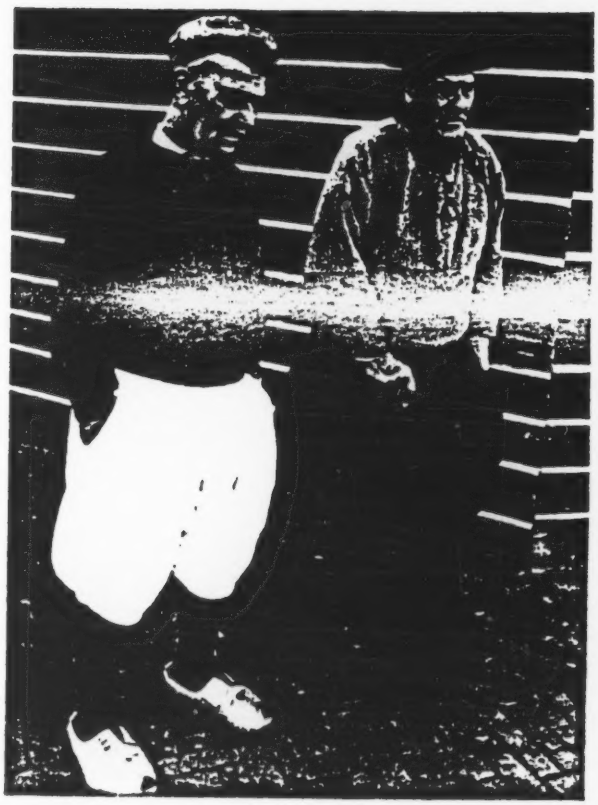
After reading, ask: *Why was Eric so excited?* (Because so many friends and relatives were coming for dinner) *What special food did cousin Ann bring?* (clam chowder) *Was it cold in Plymouth that day?* (Yes) *How do you know?* (Because they built a fire in the fireplace) *Was the Charles family's food similar to or different from the Pilgrims'?* (similar) *What was Grandma Charles thankful for?* (A wonderful, healthy family)

Have students compare their guesses about the Charles family's Thanksgiving with the actual description in the text.

Through discussion

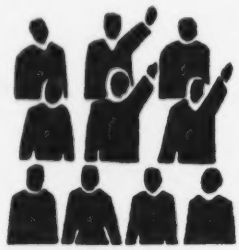
Motivation

Tell the students to look down at their shoes. Ask: *What kind of shoes are you wearing? What do your shoes tell you about how you have adapted to your environment?* (Let the children speculate about the function of their shoes. For example, children wearing tennis-type shoes might say that their shoes help them run fast; children wearing thick-soled shoes might mention comfort or protection.) Have the children discuss other clothing they have on that shows how they have adapted to their environment. (Hats, shirts, and pants, for example, give protection from the sun, rain, or extreme temperatures.)



Using Wood for Shoes

In many parts of the Netherlands, the land is wet. For a long time, the Dutch made their shoes of wood. The thick wooden shoes kept out the water. In winter, the Dutch put straw into their wooden shoes. The straw helped keep their feet warm. How do wooden shoes show that the Dutch adapted to their environment?



Congress makes the laws.

The President sees that the laws are followed.

[illegible] sees that the laws are followed.

A Three-Part Government

The Constitution writers decided to divide the government into three parts. One part was a special group called Congress. The people from each state would choose representatives to form the Congress. Congress would make the laws.

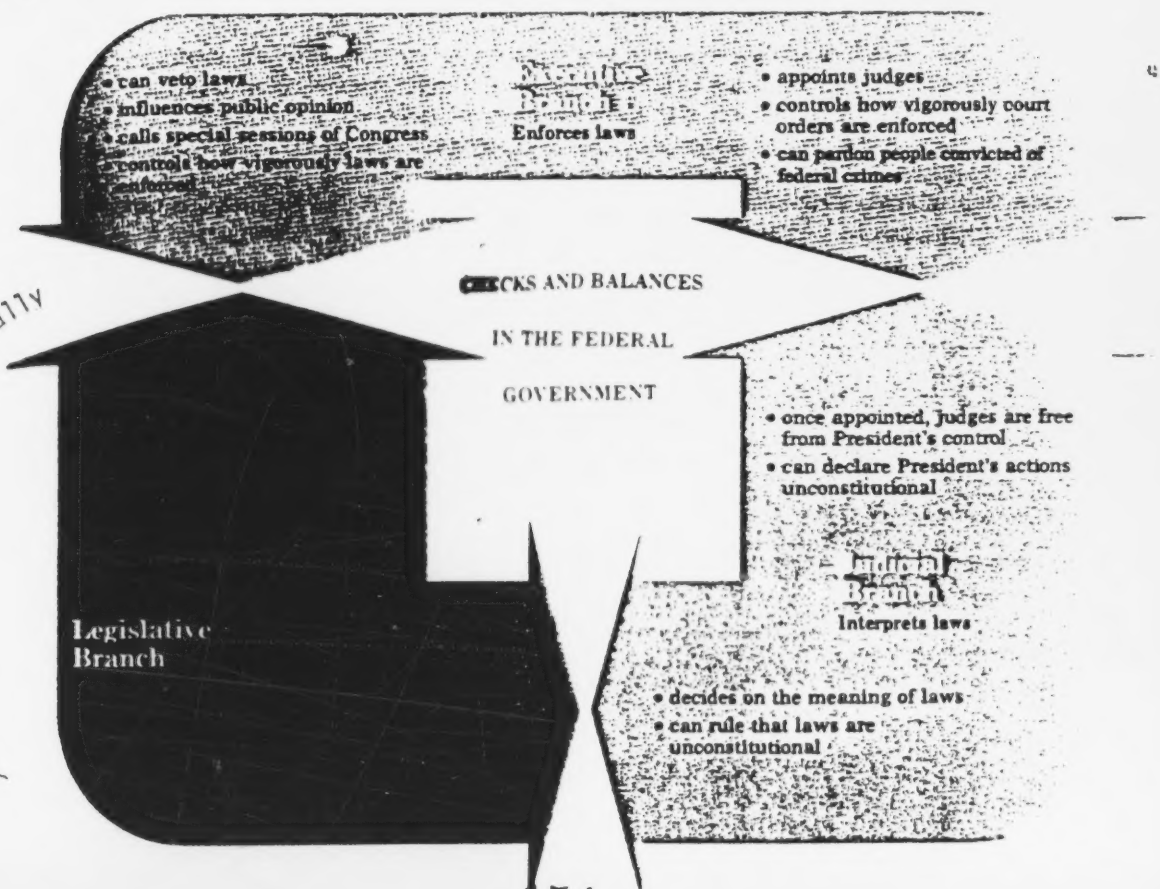
The Constitution writers also decided that our country needed a leader. That leader would be the President, chosen indirectly by people from all the states. The President would see that the laws were followed.

The third part of our government is made up of courts and judges. Some judges would be chosen by the President. Others would be elected. They would settle arguments about what the laws mean.

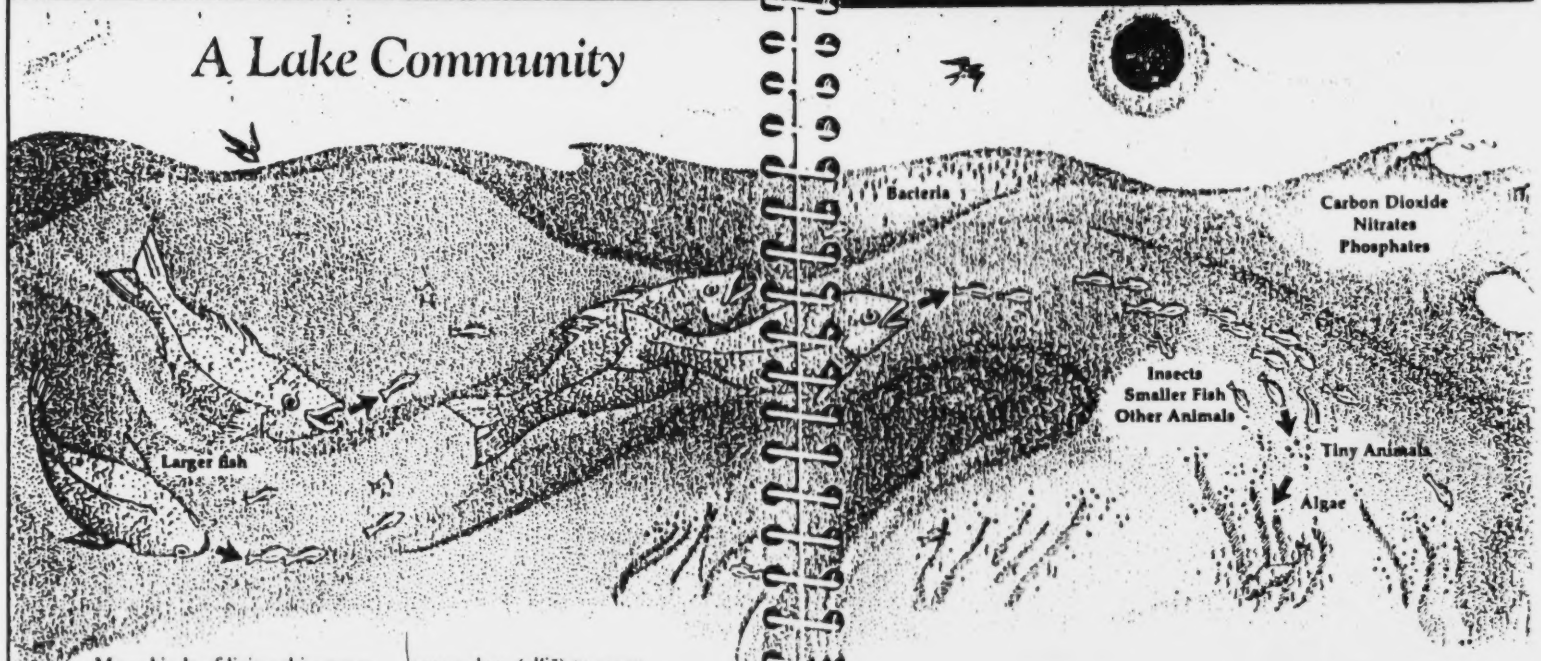
The Constitution writers divided the government into these three parts so that one part would not become too strong. They hoped that if one part of the government got too strong, the other parts would check, or limit, its power.

Pictorial

Graphically


• can veto laws
• influences public opinion
• calls special sessions of Congress
• controls how vigorously laws are enforced
Enforces laws
• appoints judges
• controls how vigorously court orders are enforced
• can pardon people convicted of federal crimes
CHECKS AND BALANCES
IN THE FEDERAL
GOVERNMENT
• once appointed, judges are free from President's control
• can declare President's actions unconstitutional
Interprets laws
Legislative Branch
• decides on the meaning of laws
• can rule that laws are unconstitutional

A Lake Community

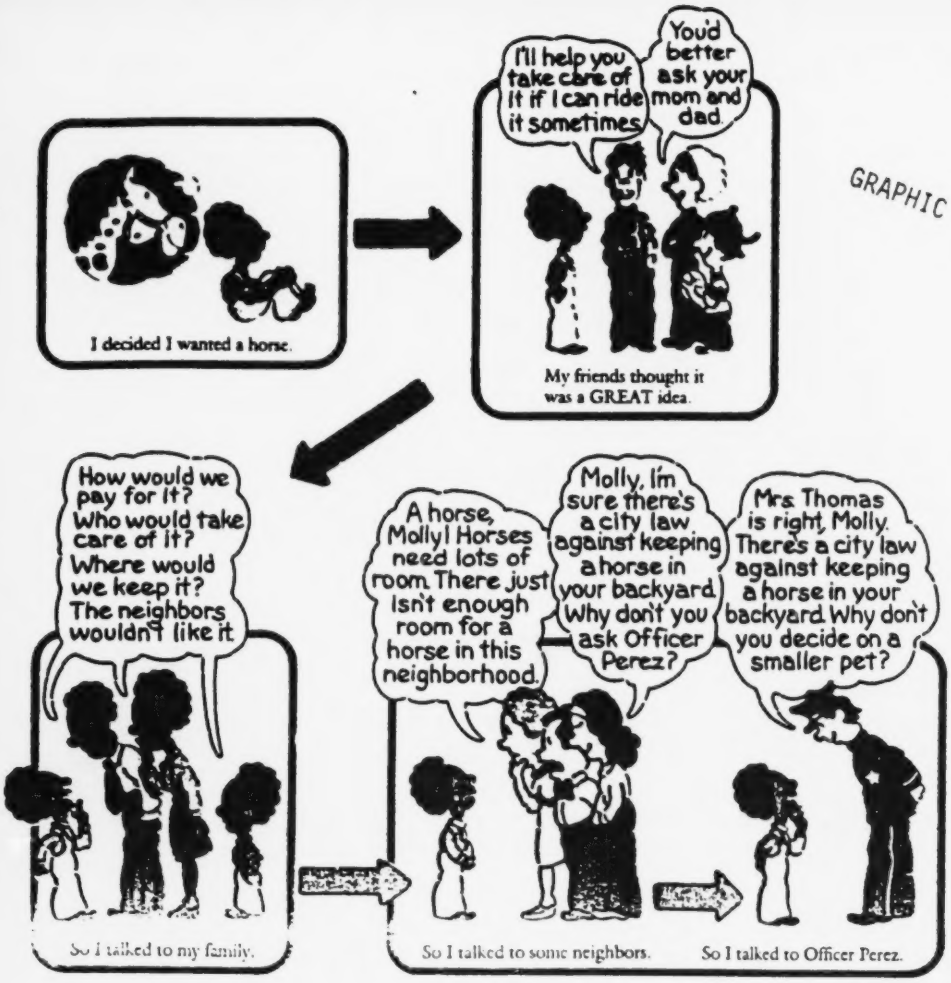


Many kinds of living things can be found in a freshwater lake or pond. They depend on each other for food. Here's how it happens.

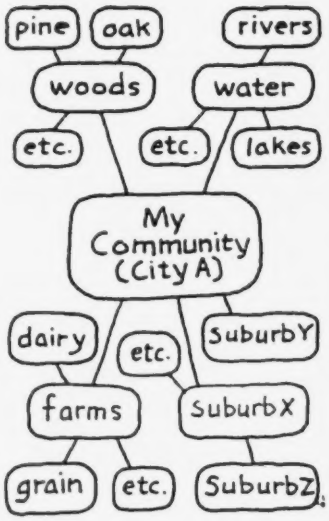
Sunshine helps water plants like green algae (al'jē) to grow. Substances such as carbon dioxide (kär'bən di ok'sīd), nitrates (nī'trāts), and phosphates (fos'fāts) also must be in the water for algae to be able to grow.

Very tiny water animals eat the algae. Small fish, insects, and other small animals eat the tiny animals. Larger fish and animals then eat the smaller ones.

Bacteria also live in the lake. They help keep the lake clean. When other living things die, bacteria change them back into nitrates, phosphates, and carbon dioxide. These help algae to grow, and the chain of life in the lake goes on.


I decided I wanted a horse.
I'll help you take care of it if I can ride it sometimes.
You'd better ask your mom and dad.
My friends thought it was a GREAT idea.
How would we pay for it? Who would take care of it? Where would we keep it? The neighbors wouldn't like it.
So I talked to my family.
A horse, Molly! Horses need lots of room. There just isn't enough room for a horse in this neighborhood.
Molly, I'm sure there's a city law against keeping a horse in your backyard. Why don't you ask Officer Perez?
So I talked to some neighbors.
Mrs. Thomas is right, Molly. There's a city law against keeping a horse in your backyard. Why don't you decide on a smaller pet?
So I talked to Officer Perez.

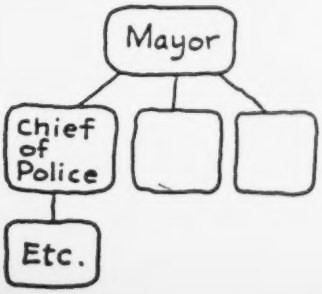
As a challenging activity, high-potential students might be asked to draw a diagram, showing things that surround their community. If theirs is an urban community, they can expand to include a nearby rural and/or ...an area or other communi... ...s in your city. If it is a suburban area, expand to include the city; and if it is rural, expand to include any nearby urban areas. The following example might be put on the board to help the students get started.

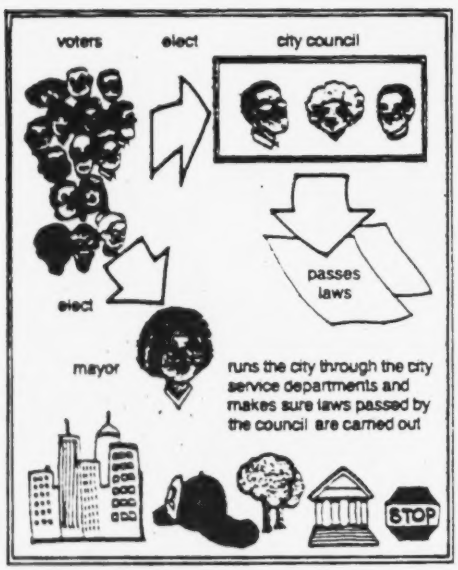


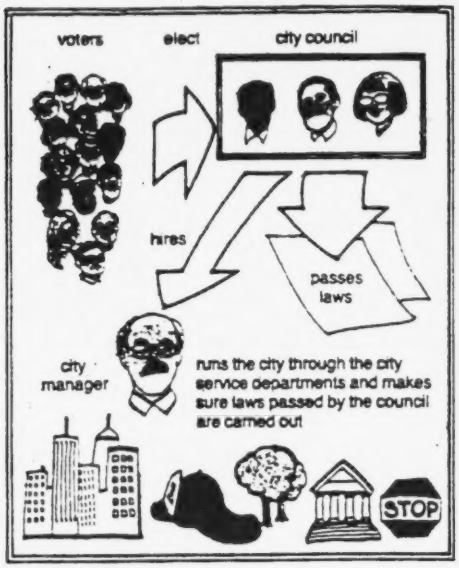
Have **students with special learning needs** fill in a chart like the one below with labeled pictures of different forms of communication and transportation of the past, present, and future.

	Past	Present	Future
Comm			
Trans			

develop a chart showing the government organization of the executive branch of your community government. An example would be:







The mayor-council plan on the left and the council-manager plan on the right are both representative governments. Can you see advantages of one plan over the other?

Lesson 2 (pp 18–20)
Suggested Teaching Time
1 day

Knowledge Objectives
Students will learn:
- that communities' sizes vary.
- that the size of a community affects its nature.
- that towns or villages are small in size and population and are often in rural areas.
- that cities are large in size and population and have great diversity of people and opportunities.
- that suburbs are communities near a city that depend on the city.
- that a city and its suburbs together are known as an urban area.

Skill Objectives
Students will learn how to:
- list characteristics of towns, cities, suburbs, and urban areas.
- identify their community as a town, city, or suburb (and name the urban area [illegible]).

Vocabulary
town
village
rural area
city
suburb
urban area

Preliminary Activity
Display pictures of different types of communities (rural, urban, suburban). Ask students for words that describe each picture, and list their contributions. Explain that different kinds of communities look and feel different. Later you can post each picture with the students' descriptive words and the correct label—city, town, suburb.

Developing the Lesson
Have students read the lesson to find out about different-sized communities. Discuss the photographs and the aspects of rural and urban life they show. Have students look at the map (page 20) and identify the city and name the suburbs.

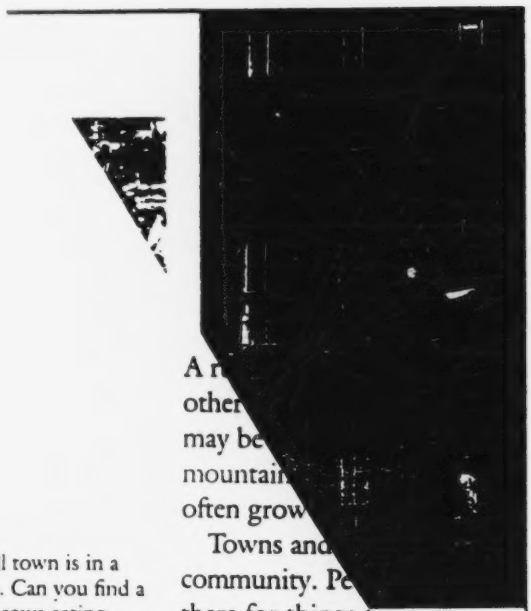
On the chalkboard or on heavy paper or oak tag, prepare a chart as shown at right.

ORGANIZE INFORMATION

TOWN	CITY	RURAL AREA	URBAN AREA
small in the country people come to shop services - bank	large - crowded tall buildings many things to do	country farms forests desert few people	includes city and suburbs many people

Ask students what they know about towns from the text, and fill in their statements on the chart. Do the same for rural area, city, and urban area.

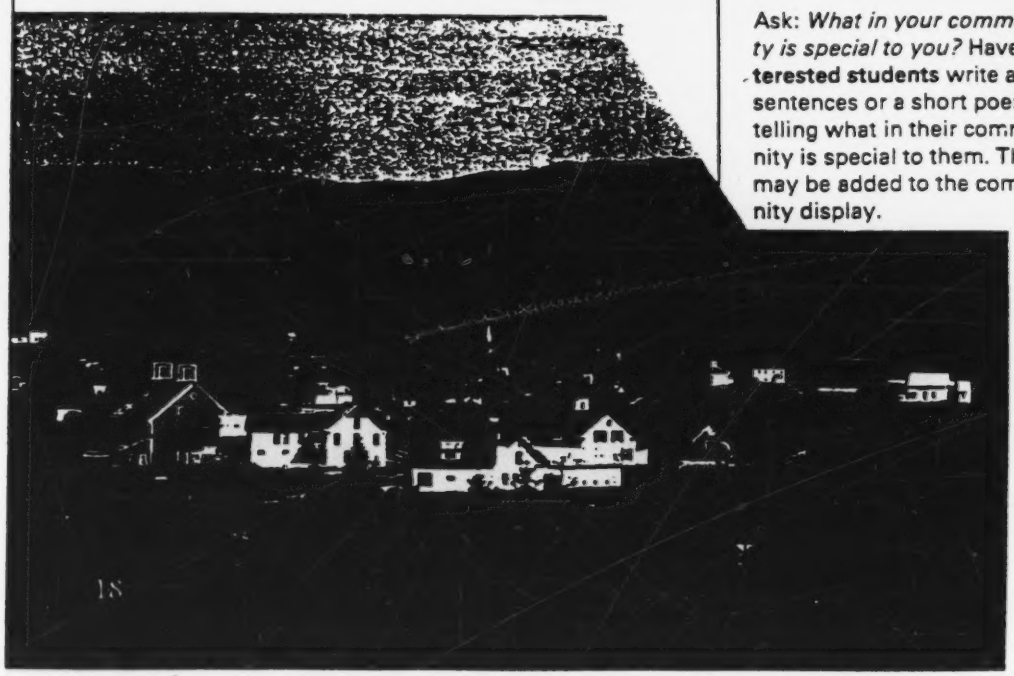
Ask: *What kind of community do we live in? How do you know?* Have them check their description of the community with the appropriate list. If the community is a suburb in an urban area, have them name both the suburb and the city.



This small town is in a rural area. Can you find a barn and cows eating grass?

Additional Activities
As an activity for the **whole class,** have students classify the other communities they named in the unit introduction as town, city, or suburb.

Ask: *What in your community is special to you?* Have **interested students** write a few sentences or a short poem telling what in their community is special to them. These may be added to the community display.



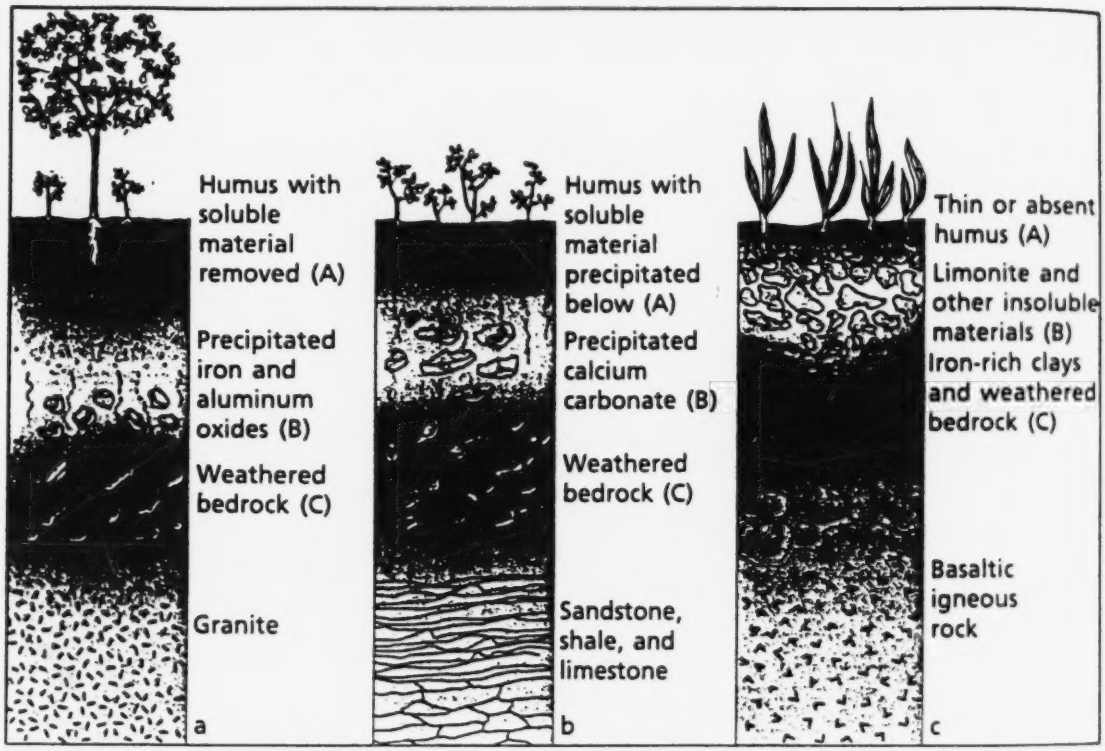


FIGURE 15–5. The soil profile is different for soils developed in humid (a), arid (b), and tropical regions (c), and depends on the type of bedrock present and amount of rainfall.

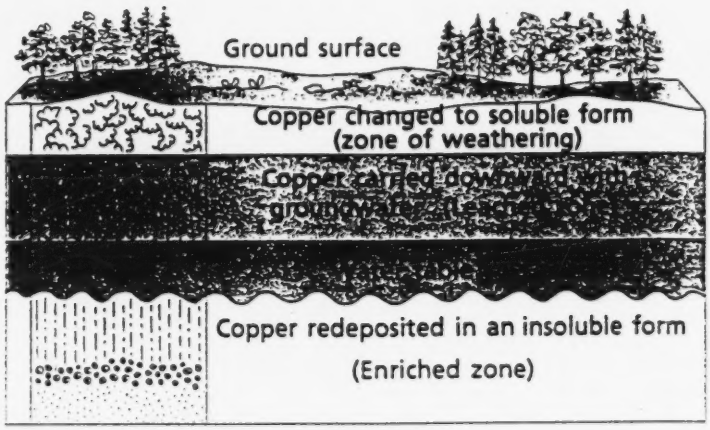
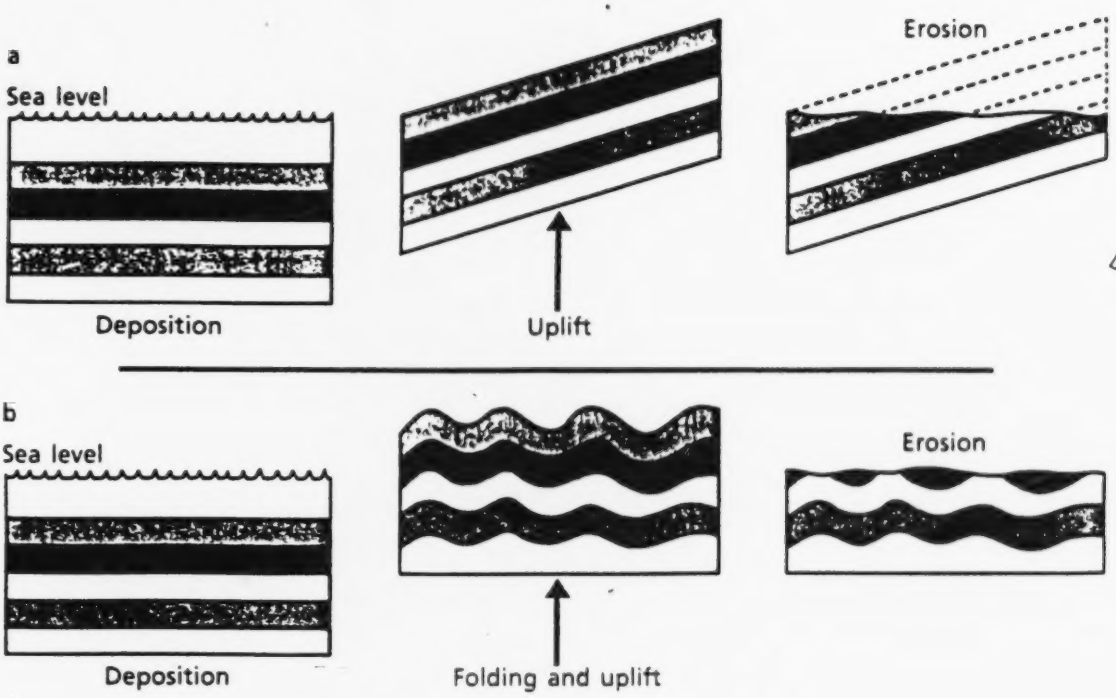

Ground surface
Copper changed to soluble form (zone of weathering)
Copper redeposited in an insoluble form
(Enriched zone)

FIGURE 23–4. Copper may be concentrated by groundwater into a sedimentary ore deposit.

Country	Imports	Exports	Dev. or Ind.
Japan	oil food	manufactured goods	Ind.
Nigeria	manufactured goods machines food	oil soybeans cotton bananas	Dev. Dev.

Have students use different-colored stars or other symbols to indicate whether a country is industrialized or developing. They may also use cutouts and drawings to show products.



Diagrams

FIGURE 20–2. Relationships among rock layers become more complex as tilted layers (a) and folded layers (b) are eroded.

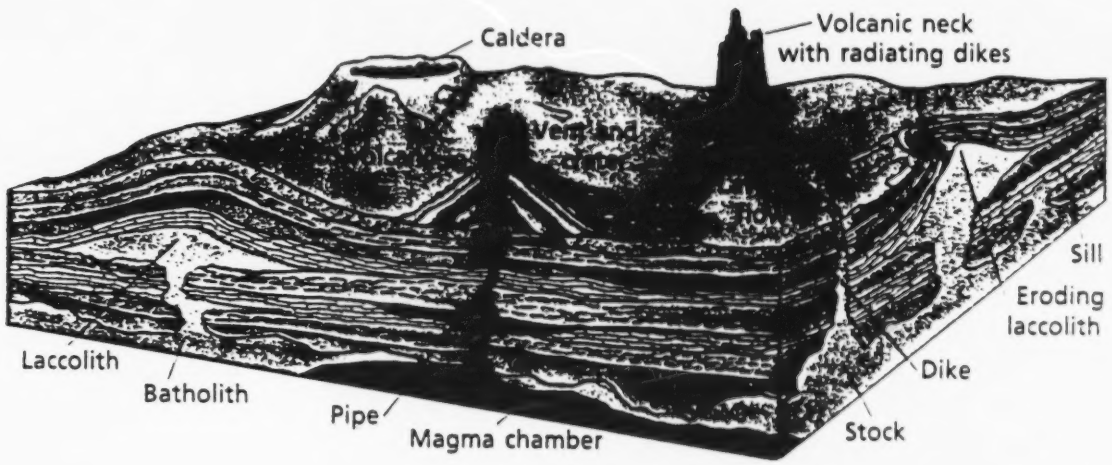


FIGURE 19–12. Intrusive igneous rock structures harden below the surface. Extrusive structures are found on the surface.

as a sill, but the magma forms a thicker sheet that domes upward. An inactive volcano may have magma solidified in its pipe. This structure, called a volcanic neck, is resistant to erosion and may remain after the volcanic cone material has been removed by erosion.

Table 23–1

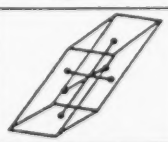
Types of Ores and Their Uses

Type of deposit	Ore	Use
High-temperature vein deposits	galena (PbS)	lead
	sphalerite (ZnS)	zinc
	cinnabar (HgS)	mercury
	chalcopyrite ($CuFeS_2$)	copper
Igneous bodies	kimberlite	diamond
	chromite ($FeCr_2O_4$)	chromium
	magnetite (Fe_3O_4)	iron
	pentlandite $(Fe, Ni)_9S_8$	nickel
Contact metamorphic	corundum (Al_2O_3)	abrasive
	graphite (C)	lubricant, pencil "lead"
	garnet (varies)	abrasive
	magnetite (Fe_3O_4)	iron
Sedimentary	gypsum ($CaSO_4 \cdot 2H_2O$)	plaster
	calcite ($CaCO_3$), limestone	cement, building stone
	bauxite (varies)	aluminum
	salt (NaCl)	food preparation
	clay (varies)	brick, pottery
	sulfur (S)	fertilizers, explosives
	sand and gravel	construction

Charts

Table 11–2

Crystal Systems

System name	Axes of intersection	Ideal shape	Length of axes	Example
cubic or isometric	90°		all three axes equal	
tetragonal	90°		two horizontal axes equal third axis different	
hexagonal	60° 90°		three horizontal axes equal fourth axis different	
orthorhombic	90°		all three axes unequal	
monoclinic	90° third axis different from 90°		all three axes unequal	
triclinic	all 3 axes different from 90°		all three axes unequal	Plagioclase

Social Studies Skills Worksheets

The Social Studies Skills Worksheets that follow focus on 15 key social studies skills:

- Finding Information in Reference Sources
- Analyzing Pictures
- Interpreting Charts and Graphs
- Developing a Sense of Chronology
- Organizing Ideas in Writing
- Analyzing Information
- Distinguishing Fact and Opinion
- Determining Cause and Effect
- Detecting Stereotypes
- Seeing Others' Point of View
- Making Inferences
- Drawing Conclusions
- Synthesizing Information
- Making Judgments
- Problem Solving

These master lessons can be used at any point during the study of the text. The Special History Skills, Skill Activities, and Critical Thinking Questions on the Chapter Review pages of *Land of Promise* provide ample opportunity for reviewing and reinforcing your instruction of each of these skills.

Information for teachers

About Activities

Process Skills

Focus on Physical Science provides experiences that help students both develop and apply critical thinking process skills. These experiences are provided by the use of higher level divergent questions, laboratory investigations, controlled experiments, and creative activities. Students are given the opportunity to use and apply the basic and complex process skills, thus facilitating their advancement toward higher levels of cognitive thinking. Through integration of these skills, students should develop the ability to reflect and evaluate their approaches to a problem. Students able to think in terms of several solutions to a single problem are not limited to concrete activities. Instead, these students can formulate hypotheses as testable ideas in their minds and can demonstrate deductive patterns of thought. Through integration of the important critical thinking process skills listed below, students develop the ability to think logically and abstractly. The table that follows the list indicates the activities in ***Focus on Physical Science*** that emphasize various process skills.

Basic Process Skills

Observing: Students use one or more senses to increase their perceptions in order to learn more about objects and events.

Classifying: Students group objects or events based on common properties and/or categorize based on existing relationships among objects or events.

Inferring: Students propose interpretations, explanations, and causes from observed events and collected data.

Communicating: Students convey information verbally, both in oral and written forms, and visually through graphs, charts, pictures, and diagrams.

Recognizing and Using **Spatial** Relationships: Students estimate the relative positions of moving and nonmoving objects to one another.

Measuring: Students identify and order length, area, volume, mass, and temperature to describe and quantify objects or events.

Predicting: Students propose possible results or outcomes of future events based on observations and inferences drawn from previous events.

Using **Numbers:** Students transfer or apply ordering, counting, adding, subtracting, multiplying, and dividing to quantify data where appropriate in investigations or experiments.

Complex Process Skills

Interpreting Data: Students explain the meaning of information gathered in scientific situations.

Forming **Hypotheses:** Students make an assumption in order to draw out and test its logical consequences.

Separating and Controlling **Variables:** Students recognize the many factors that affect the outcome of events, and understand the relationship of the factors to one another so that one factor (variable) can be manipulated while the others are controlled.

Experimenting: Students test hypotheses or predictions under conditions where variables are both controlled and manipulated.

Formulating **Models:** Students construct mental, verbal, or physical representations of ideas, objects, or events. The models are then used to clarify explanations or to demonstrate relationships.

Defining Operationally: Students form a working definition that is based upon actual experience in which the student has participated.

Time Out for Map and Globe Review (pp 25–30)

This special section gives students an opportunity to review the map and globe skills that they learned in earlier books in the program. It is located near the beginning of the book so that the students can review these skills before any new ones are introduced.

This review section is organized into six parts:

1. What Can Maps and Globes Do?
2. What Do Maps and Globes Show?
3. Where Is It?
4. Which Way?
5. How Far?
6. What Causes Day and Night?

Each part concludes with questions or activities that are called "Exploring with Maps." These questions help students practice the particular map-reading skills presented.

TIME OUT for Map and Globe Review

What Can Maps and Globes Do?

"What do you want to see at the museum?" asked Mr. Lopez.

"Space ships!" answered Gloria.

"Dinosaurs!" said Steven.

Mr. Lopez replied, "Let's use a map to find out where these exhibits are."

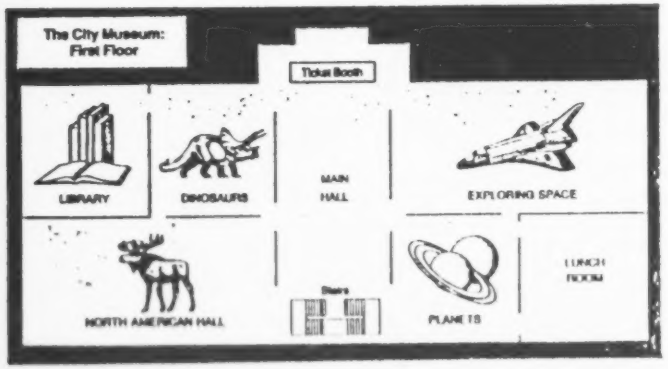
Maps and globes show us where things are. They also show us how to get to different places.

Exploring with Maps. Use the map below to answer the questions.

1. Is there a dinosaur exhibit on the first floor of the museum?
2. Is there a place to eat lunch in the museum?

What Do Maps and Globes Show?

Maps show Earth. There are four oceans on Earth: the Atlantic, Pacific, Arctic, and Indian oceans. There are seven continents: North America, South America, Europe, Asia, Africa, Australia, and



What Can Maps and Globes Do? (p 25)
Suggested Teaching Time
1 day

Objectives
Students will learn how to:
- recognize that maps show where things are.
- describe relative location of places.

Teaching Suggestions
Before reading the text, have students tell of times when they or their families have used maps and the[y] they have u[sed] answers are [m]aps, road maps, and maps of amusement parks. You might suggest that students bring some of these maps to class for a bulletin-board display.

Have students read the text aloud and answer the questions orally. Following the reading, stress: (1) the m[ap] shows where things ar[e] (2) pictures on the map tel[l] about the exhibits; (3) th[e] title tells what the map shows.

Answers to Exploring with Maps
1. Yes, there is a dinos[aur ex]hibit.
2. Yes, there is a lunch[room] in the museum.

What Do Maps and Globes Show? (pp 26–27)
Suggested Teaching Time
1 day

Objectives
Students will learn how to:
- identify the seven continents and four oceans.
- recognize that the globe represents the round earth and shows land and water.
- recognize that maps use symbols to show real things.
- use a map key to interpret symbols on a map.

Teaching Suggestions
Begin by having students review their understandings about maps at this p[oint]. They might re[fer] to the t[ext] of the p[re]v[ious] lesson if [they] may should note [that] maps show where things are and help us get to different places.

Have students read the first paragraph and study the map on page 26. Have them identify North America as the continent on which they live. Ask students which continent is closest to North America. (South America) If a world wall map is available, have one student go to the wall map and point out the seven continents as another student names them. Remind students that continents are the largest landmasses on Earth and oceans are large bodies of salt water.

Have students read the second paragraph on page 26. If possible, display a classroom globe. Point out the blue water and the land in various colors on the globe. Take turns having individual students locate the United States on the globe. Have them also name Canada and Mexico as neighboring countries.

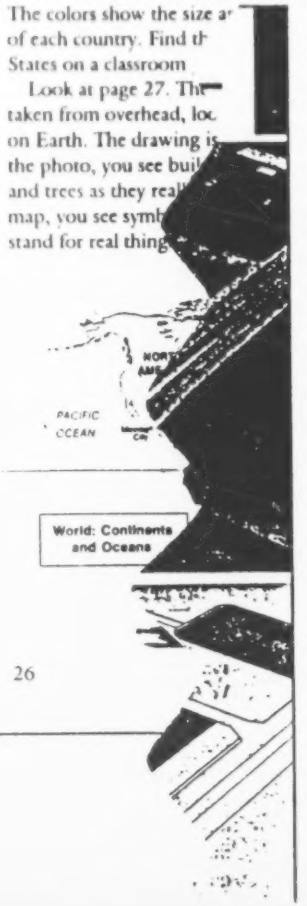
You may want to show how the continents and oceans become slightly distorted as the globe is flattened out to make world maps. Do this by cutting a beach ball into gores and flattening it. This will show that a curved surface cannot be flattened without tearing, stretching, or crumpling parts of it.

Skill instruction in text

Antarctica. Find the continents and oceans on the map below. On which continent do you live?

A special kind of map that is round, like Earth, is called a globe. On a globe, water is usually blue. Land is shown in different col[ors]. The colors show the size a[nd] of each country. Find th[e] States on a classroom

Look at page 27. Th[e] taken from overhead, loo[k] on Earth. The drawing is[n't] the photo, you see buil[dings] and trees as they real[ly] map, you see symb[ols] stand for real thing[s].



Have students read about the photo-map comparison shown on page 27. Discuss how the photo and the map are alike and how they are different. Both show the same view of a place. The photo shows things as they really are; the map uses symbols to stand for real things.

Have students compare each item in the photo with the way that item appears on the map. Point out the map key and explain that it shows what the symbols on the map mean.

Have one student read the title of the map (Comparing a Photo and a Map). Stress that students should always look for the map title to learn what a map is about.

Working together as a class, answer the first question in "Exploring with Maps." Then have students answer the second question and trace the roads on the photo and on the map. Ask: *What else is shown in the map key? (parking lots) What symbol represents parking lots? (the color brown)*

Answers to Exploring with Maps
1. The color red stands for a building. The color green stands for grass and trees.
2. The symbol for roads is a gray color.

Related Materials
Have students complete #2–4 in the Duplicating Masters: Map and Globe Skill Activities.

FOCUS ON Skills

Skill instruction in text

Chapter Preview

The purpose of previewing a chapter is to try to see what you will be studying. In other words, you are trying to determine what you will be learning before you actually begin to study. A preview is like a band rehearsal or a hockey practice. Students who participate in music or sports must practice their skills in order to perform to the best of their abilities at "show time" or during a game. How does previewing a chapter help you to perform better? Basically, the preview prepares you to think effectively about the new material. Just as an athlete warms-up his or her muscles before a game, your brain needs to be "warmed-up" before you study.

You will be using three techniques for your chapter preview. The first is to determine the scope and organization of the information in the chapter. Secondly, you will be focusing on key words. Finally, you must determine the purpose of the chapter.

Scope and Organization

1. Look at the chapter title. Think of several questions you have about Earth and the moon that may be answered.
2. Look at the section titles. These titles are the authors' outline and show how the information is divided into subjects. The following list shows the type of information that follows the first three section titles in Chapter 4. After reading this list, write a statement about the information that follows the remaining section titles.
   a. (Section 4:1) Real motion helped scientists realize Earth's position in the universe.
   b. (Section 4:2) Gravity and inertia cause the planets to move and follow specific paths.

c. (
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3. Look
chap
Reac
main
chap
4. Quic
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tions
to be
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New Voc
1. Look
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FOCUS ON Skills

Defining New Words

Your textbook is designed to help you get information quickly and easily. One way that the text provides information is to give you the meanings of new and important words. Two ways are used in this textbook to give you definitions—boldface terms and section titles.

There are several strategies for learning the meaning of an unknown word. This textbook is designed so that you can determine word meanings from clues given within the context that surrounds the word. The most obvious words are those printed in boldface type. Boldface terms are those that are being introduced and defined for the first time. These words are defined in the sentence in which they are first used, or in the paragraph in which they are introduced. Sometimes, a key to pronouncing the word is given as well. Look at the second paragraph in Section 1:2 on page 9. Find the meaning of the boldface term **astronomy.** Note where the definition is found. Often a verb signals the definition. For example, Section 1:2 contains the following information:

"Astronomy is the study of cosmic objects, or objects in the universe beyond Earth's atmosphere."

Notice that verbs such as *is, are, mean,* and *means* often are used to signal the definition.

All boldface terms used in each chapter are listed in *Vocabulary* at the end of the chapter. Use context clues to define the words in the vocabulary list for Chapter 1.

You also can use word analysis skills to determine the meaning of words. You may have learned in your English or language class that words are composed of roots, suffixes, and prefixes. These "building blocks" often are derived from

Greek
means
means
word
with t

Afte
defini
to ch
glossa
Defin
to th
Dictio
inform
of its
defin
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A
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FOCUS ON Skills

Classifying

You classify objects every day without thinking. How do you organize the clothes in your dresser? You may put all the socks in one drawer, and underwear may go in another. Sweaters may be in the largest drawer. Putting simular objects together is known as classification.

Classifying is an important process for scientists. It helps them to organize information. Classification systems also enable them to compare and contrast properties of various groups. For example, scientists classify elements as metals, nonmetals, and metalloids. Table 6–2, The Periodic Table, illustrates this classification system. Once classified, the chemical elements are easier to study.

How do scientists determine the categories for classification? They begin by identifying a common property. For instance the size, shape, color, use, behavior, or composition of the items may be studied.

Look at the sports equipment pictured. How could you classify this equipment? There are several possibilities. You might classify them by use. A baseball bat, a tennis racquet, and a golf club are all used to hit a ball. The balls would form another category.

Think of other ways to classify these items. What about shape? You may choose to classify the equipment by the type of sport for which it is used. You will have six groups in this classification system.

Chapter 6 discusses the classification of the elements. Using Tables 6–2 and 6–6 and Section 6:9, classify the following elements into two categories. Label each category.

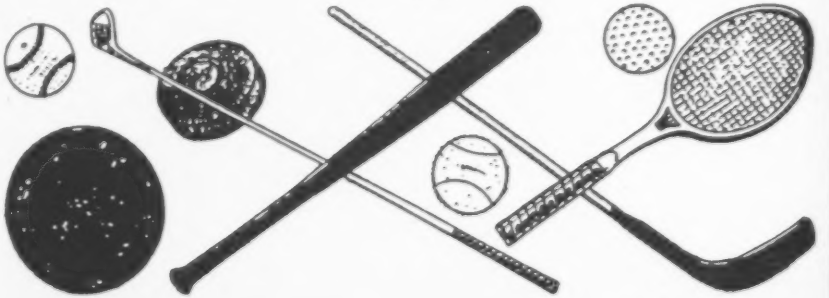
hydrogen	iron	zinc
aluminum	oxygen	bromine
silver	fluorine	mercury
gold	copper	helium

Can these elements be classified in any other ways?

Using the periodic table (Table 6–2) classify the following elements into categories.

plutonium	nobelium	xenon
magnesium	zirconium	curium
radium	neon	krypton

Since people first began to observe their world, they categorized items. Recall that scientists use standards of measurement. In the same way, development of standard classification systems such as the periodic table enables scientists all over the world to communicate with each other.



CHAPTER SKILLS AND ACTIVITIES

Special History Skills:
Comparing Sources of Information

Today we have many more sources of information about political affairs than the colonists had.
(1) Make a list of all such sources of information you can think of that are available to us today.
(2) Divide them into two groups—those
were also available to the co
which were not.
(3) Star those sources that you
important for an informed cit
cuss your choices with your cla

CHAPTER SKILLS AN

Special History Skills:
Working with Charts

Charts can help you learn in
and communicate it clearly. Fo
the chart on page 23. Note
answer the following questio
the Spanish explorers' goals? (
accomplished their goals? (3
failed to do so?

Now make a chart that sum
mation in this chapter about
Mexico around 1500. First dec
want to show. List these as hea
paper. See the examples belo
chart. You may not be able to fi
for every region or tribe men
Charts should always have ti
title for your chart. Suggested

REGION TRIBES ORGANIZATIO

CHAPTER SKILLS A

Special History Skills:
Summarizing Viewpoints

Americans in the 1960s were deeply divided over the best solution to racial problems. Some favored the status quo, some favored gradual change, others favored nonviolent direct action, and still others supported calls for black power. First, write a paragraph explaining the economic and social conditions blacks faced between 1960 and 1968. Second, write a paragraph that summarizes views supporting nonviolent direct action that were commonly held during the period. Third, write a paragraph that summarizes commonly held views supporting black power. For paragraphs 2 and 3, include a discussion of the spokesmen and women for the various points of view. To do so, you will need to do library research. Finally, write a paragraph expressing your views.

CHAPTER SKILLS AND ACTIVITIES

cial History Skills:
preting Political Cartoons

mas Nast was one of America's most famous ical cartoonists. His cartoons in *Harper's* kly against Boss Tweed, such as the one w and on page 452, attracted wide-spread tion and led to Tweed's downfall.

r the Thumb," by Thomas Nast, 1871

Look at the cartoon and then answer the follow-
ng questions:
(a) Whose thumb is in the cart
e thumb so big? (c) What is ur
(d) What does "under the thum
Write a paragraph summarizir
Nast meant to convey with thi

CHAPTER SKILLS AND ACTIVITIES

Special History Skills:
Reading Newspapers

The Constitution has undergone many changes and reinterpretations over the years. This ongoing process is apparent in the news of the day.

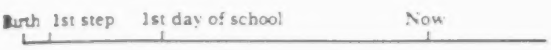
News articles usually follow a basic plan. Look
ine. This gives you a clue about
f the news story. The first para-
/s article usually gives the most
agraphs at the end contain the
nformation. A typical news arti-
r the questions: *who? what? n?*
of newspaper article is the fea-
ries are more loosely constructed
ople, issues, and ideas. They do
basic rules that apply to news
lline may plant a question in your
n give you information. Impor-
appear at the end of the article.
veek's newspapers. Photocopy a
feature story about one of the
that relate to the Constitution:
assed by Congress, (2) women's
ority rights, (4) changes in the
stitution," (5) use of the elastic

nderline what you think are the
portant points. Then determine
news article or a feature story.
paragraph summarizing the arti-
expressing your opinion.

CHAPTER SKILLS AND ACTIVITIES

Special History Skills:
Making Time Lines

A time line is a list of events. It can help you tell when important events occurred and how close in time they were to other events. For example, a brief time line of your life might look like this:



You can tell from the time line that your first step was closer to your birth than to your first day of school.

Now draw a time line showing major events between 1763 and 1776 that led to the American Revolution. List at least ten events. Do events get closer in time or further apart during the years 1763–1776? How might this affect attitudes in the colonies and in England?

Additional Activities

Interested students may write stories about a community emergency and how the people and especially the children helped out.

As an **easy activity** have students make illustrations of the danger that threatened Fort Wayne, or of the people working together to save the city. These may be posted with the news stories under "People Helping Out."

The disruption of a different kind of upset of nature, the blizzard of 1888, may be shown to **interested students** in:

Stevens, Carla. *Anna, Grandpa, and the Big Storm.* New York: Houghton, Mifflin, 1982.

Have **students with special learning needs** draw a line down the middle of a large piece of construction paper, dividing it in half. On the left side they are to draw a picture of a community disaster such as a flood, blizzard, tornado, earthquake, mudslide, or fire. The picture should show people in danger or in need of help. Turn the pictures face down in a pile and have each student pick one picture. On the right side of the picture they have picked, they are to draw an "ending" to the picture, showing people in the community coming to the rescue and helping others.

An optional third step could be to turn the pictures face down again and have students pick another picture. This time they can either write, tape-record, or tell a story to the group about the picture.

Additional Activities

Have each student in the **whole class** investigate the national origins of his or her family. With the aid of a book such as *Who Do You Think You Are? Digging for Family Roots* by S. Hilton (Philadelphia: Westminster Press, 1976), assist students in the research process by suggesting that they interview elderly family members, search family albums, write to relatives in other countries, and gather information about countries, cities, and towns in which their families lived.

For **students with special learning needs** or for the **whole class,** have students bring to class artifacts, articles of clothing, pictures, music, books, food samples, or samples of the written language of their ancestry. Have them share with the class the item they brought and tell something about their national origin, their customs, or the story about their ancestors coming to America.

Immigration to the United States presented both opportunities and problems. Selections from the following books may help **interested students** understand what it was like to be a stranger in the United States and then part of a community:

Cohen, Barbara. *Gooseberries to Oranges.* New York: Lothrop, Lee & Shepard, 1982.

Lim, Sing. *West Coast Chinese Boy.* Plattsburgh, New York: Tundra, 1979.

Surat, Michele Maria. *Angel Child, Dragon Child.* Milwaukee, Wisc.: Raintree Publishers, 1983.

Additional Activities

Have the **whole class** grow algae in a small aquarium. Make sure they have lots of sunlight and warm temperatures. A daily record book should be kept near the aquarium. The progress of the algae should be recorded each day.

For **students with special learning needs** or for the **whole class** divide students into two teams. Take turns giving each team an ecological problem to solve. Give each team one minute to decide on a solution to the problem. If they come up with an acceptable solution, award them one point. The team with the most points at the end of the game is the winning team.

Ask **interested students** to do a research report on what an eco-system is and how this system can be destroyed. Students should draw their own charts and diagrams and present this visual material with their report to the entire class.

Have the **whole class** take group action on an environmental issue. Is there a nearby body of water that is becoming polluted; or an empty lot that is becoming a trash heap; or a part of the schoolyard that is a mess? After the class decides which project to take on, help them find out why the area has become a problem. Find out who owns the property in

Additional Activities

Divide **students with special learning needs** into two teams for charades. Each team should prepare a set of cards with the name of a service career on each card. One person from the other team should pick a card from a hat or a box and pantomime that occupation for his or her teammates. The teammates have one minute to try to guess the name of that occupation. If the team guesses correctly they get one point. The team with the most points, when all of the cards have been used and everyone has had a turn, is the winning team.

Meeting Needs: Students with hearing problems may not hear the pop. Instruct them to feel the jerk or vibration of the wood splint when the explosion occurs.

Meeting Needs: Many special students work better independently if the activity directions are typed on one page of paper. Use a large-type typewriter. A peer with good penmanship may also print the directions on a large sheet of paper. Do not give ditto copy to students with vision problems. The blue ink is difficult for them to read. Make photocopies whenever possible.

Meeting Needs: Allow your special students to use a commercial model kit of atoms to build the various isomers. If they are able, allow them to draw the isomers they have constructed. Provide help if necessary.

Preparation Notes: The activity demonstrates electron transfer through the use of a paper and pencil model.

Use as many examples as needed so that students fully understand ionic bonding. Have students refer to the bonding model for NaCl in Figure 7-4.

Meeting Needs: Have student peers assist special students in making 3-dimensional models. Use self-adhesive weather stripping for the rings and small circles of self-adhesive velour for the electrons. The electrons can be moved to demonstrate ionic bonding. Large models aid in conceptualizing. Make similar models to demonstrate covalent bonding.

Skill Activities

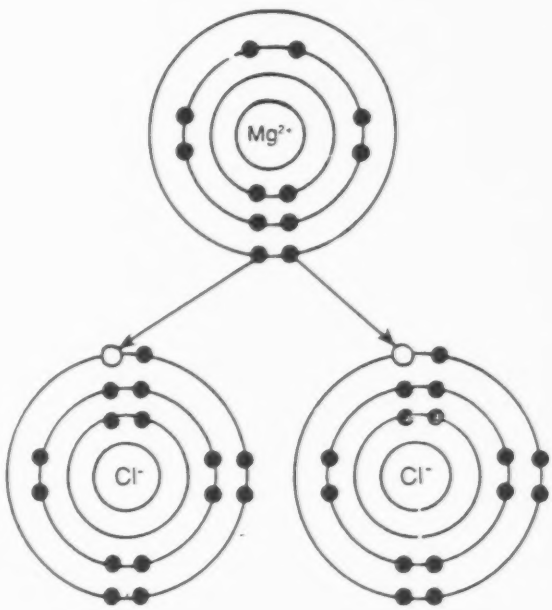
1. **Working with graphs:** Make a graph that shows the number of federal government jobs in 1865, in 1884, and in 1891. Use the information given in this chapter.
2. **Civil service melodrama:** Write the dialogue of a debate between supporters and opponents of the Pendleton bill. Challenging
3. **Crime detecting:** The text says that political corruption during the Gilded Age was accepted and commonplace, while today it is a matter of news and outrage. Find a newspaper or magazine article about suspected political corruption today. Underline the parts of the article that suggest a crime has been committed. Easy
4. **Protect protectionism:** Stage a debate between protectionists and nonprotectionists. Use a present-day industry such as automobiles for your debate.

Special Needs

If special-needs children think that the water passes through the glass, add food coloring to the water in the glass. Children will then observe that the water condensing on the glass is not the same color as the water inside.

Special Needs

When doing the activity, have all special-needs students use pins on the map and measure the distance with a piece of string.



Thinking Critically

1. What might be the advantages and disadvantages to the United States if the legislative, executive, or judicial branch of government became more powerful? Challenging
2. Why is it important that the framers of the Constitution did not burden future generations with a totally completed Constitution?
3. Do you agree with colonial leaders that only people with property should be able to hold government office? Why or why not? Easy

Skill Activities

1. **The Supreme Court:** What cases is the Supreme Court hearing this year? Consult magazines and newspapers and discuss one case in depth with your class. Challenging
2. **The unwritten constitution at work:** Find out what committees your congressman or woman is on. What seniority do they have on these committees? Call their local offices or write to them in Washington. Easy

Teaching Special Students

Many "special" students compare favorably with "regular" students in their curiosity and desire to learn science. Some even choose science as a career. Special students may, however, be sensitive to failure and lack confidence. Help these students develop a positive self-image. Do not make class or work assignments too long. Use multimedia to develop concepts. Use the same discipline for ALL students. Allow fullest possible participation. Full-time aides facilitate greater participation of some students.

Learning Disabilities

For students who are mentally handicapped, or who have learning disabilities, abstract reasoning and incidental learning are difficult. Because most of these students have experienced failure, give them positive reinforcement often. Provide clear learning goals and concrete references to daily learning skills. Use familiar objects, slower pacing, and reiteration in teaching. Stress key ideas. Students with reading problems benefit from repeatedly hearing lessons taped on audio cassettes. Those with limited writing skills may be able to tape-record text question answers.

Behavioral Disabilities

Students with emotional handicaps, autism, and other behavioral disabilities should be taught in a [illegible] consistent, and enforceable rules. Students should be given copies of a stable daily schedule. Any changes in this schedule should be clearly explained in advance. Avoid rearranging furniture unnecessarily. Familiarity in room organization and consistency in teaching style are very important. Use positive reinforcement frequently, and provide students with daily feedback on their progress.

Physical Disabilities

Students requiring wheelchairs or crutches need space for mobility. Students with less conspicuous physical problems, such as diabetes, epilepsy, or allergies, may or may not need special adaptations. Some of these students tire easily. Others are sensitive to particular foods, medications, or laboratory chemicals. Students having cerebral palsy or other fine motor coordination problems may have difficulty holding, pouring, or squeezing equipment and supplies. Be aware of these students' special needs and provide whatever assistance is needed. Having students work in pairs allows them to help each other, although each should contribute something.

Visual Disabilities

Students who have partial sight or are totally blind depend on touch and hearing. These students should sit where they can hear instructions and descriptions easily. Lessons and student answers can be tape-recorded for further study. Provide concrete objects and models. Tactile pictures that have raised and differential textures can be made from self-sticking materials such as weatherstripping, velour, and Velcro®. Peer friends may help in providing more detailed descriptions of visuals and visual presentations. Some laboratory aids for students with visual impairments are available from these suppliers.

The American Printing House for the Blind
1839 Frankfort Avenue
P.O. Box 6085
Louisville, KY 40206

Information for teachers

Dr. Ken Richter
Department of Science Education
University of Georgia
Athens, GA 30602

Hearing Disabilities

Make liberal use of visuals and the printed word when teaching students who have hearing loss. Use the senses of sight and touch. Let these students sit near the front of the room in order to "read" your body language and/or your lips. Avoid standing in front of a bright window, talking with your back to the class, or talking while your lips are hidden from students' view. Men with mustaches may pose an additional problem for these students, as the lips are partially hidden. Write all instructions, and provide descriptive handouts. The class notes of a hearing peer or your own outline may be copied for the student with a hearing disability. If an interpreter signs class activities, light should continue to shine on the interpreter even when other lights in the room are darkened for visual presentation.

Multicultural and Bilingual Students

It is important that multicultural or bilingual students not feel inferior because they use English as a second language or because they speak a language other than English. The language a student brings to school must not influence your expectations of the student's academic performance, as it is often lack of comprehension, not inherent academic deficiency, that results in low achievement. Thus, to be most effective, you must incorporate the student's native language into your course instruction. If you yourself are not proficient in a student's language, the help of a bilingual aide may be effective. Also, be sensitive to cultural differences in these students when interpreting student behavior. You may need to modify your instructional technique to accommodate these differences. Realize that "obvious" proper behavior for students of the majority culture may not be obvious to a multicultural student. Make your expectations clear and explicit, and understand that a student's unwillingness to respond to questions or participate in a group activity may be due to cultural values.

Helping Students with Special Learning Need

Judi Coffey Former Learning Disabilities Resource Teacher, Fox River Grove

Understanding the Special Student

The individual needs of students in the classroom are wide-ranging and diverse. Difficulties in learning may be broadly categorized as problems in: (1) input—obtaining information through sensory channels, such as by reading or listening; (2) processing and remembering information by organizing and associating facts; and, (3) output—communicating thoughts, feelings, and knowledge by speaking or writing. (See the diagram below.)

Accompanying disorders in one or more of the above-mentioned areas, there are also often social, emotional, or behavioral obstacles that further complicate the learning process. Lack of motivation, poor self-concept, and poor interpersonal relationships can seriously impede learning.

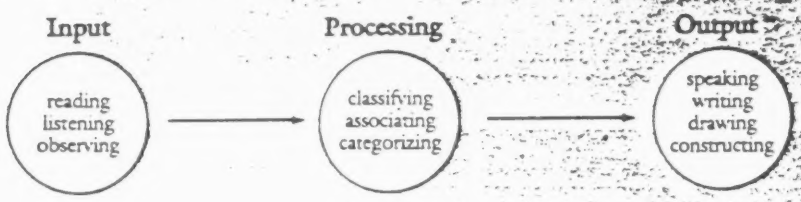
The special needs activities developed throughout the text have been created to help students (1) develop an understanding of themselves and their physical and social environment; (2) develop an understanding of people in different places and from different historical eras and see the relevance to their own lives; (3) organize and remember data; (4) communicate ideas effectively, purposefully, and persuasively; (5) develop goal-oriented behavior and positive attitudes; and (6) improve self-concepts and build self-confidence.

What You Can Do to

Students should be
read the text and parti
cussions and projects
ble. Tape-recorded sy
chapters may be benefici
with reading difficultie
are most effective wh
groups of students wi
ties and skills. Appreci
vidual differences and
work cooperatively with other people
are valuable social studies skills for all
students.

Due to their records of repeated failure and few successful experiences, students with learning disorders have often lost their motivation to attempt academic tasks. Protecting students from failure by providing them with easy activities is not the answer. All students deserve to be challenged at their own level and given the opportunity to participate in interesting and worthwhile experiences. If they are given the guidance and encouragement they need to be successful, they will develop the willingness to accept a challenge.

A variety of speaking, writing, dramatic and art activities provides students with opportunities to visualize concepts, formulate ideas, and re-create their interpretations of events, places, or people. Charts, graphs, and games help



structure in the classroom structure, they can be encouraged to attempt to develop new and more difficult skills.

Consistent positive feedback for student effort and progress is an essential part of the special needs program. Technical difficulties with writing or speaking skills are best handled as part of a remediation program kept separate from the social studies sessions. In order to fully explore and develop social studies concepts, students need to feel comfortable expressing themselves without fear of criticism.

Evaluation techniques to assess social studies learning should be selected so that special needs can be accommodated. In some cases, students with special needs may be able to participate in class testing sessions. In other cases, it might be unreasonable to require a particular student to take a written test. Administering test orally may be a useful alternative for some students.

Whether planning the educational program or selecting evaluation techniques, it is important to consider the special needs of each student in the class. Many students will at some time have a special need. Creating an enthusiastic and accepting classroom environment will help all students get the most value from the Scott, Foresman Social Studies program.

T75

Time Out for Standardized Tests (pp 148–151)
To the teacher:
What follows here is a series of test pages produced in the formats of several well-known national standardized tests. ***The purpose of this section is to familiarize students with the formats of these standardized tests.*** **Although the test questions are taken from the early units of this book,** ***they are not intended to test comprehensive mastery of information in the text.*** **You may wish to direct students' attention to these sample test pages at any one of several times during the school year. In particular, shortly before your school administers a national standardized test, you may wish to go over these pages with students to familiarize them with some of the test features they most likely will encounter.**

TIME OUT for Standardized Tests

Every once in a while—perhaps every year or every other year—most students take a special test called a standardized achievement test. Some people call these tests by another name, like "the Iowas," "the Metro," "the Stanford," "the SRA tests," etc. The tests are printed in separate booklets. The teacher reads special directions from a teacher's manual. Usually you "color" in ovals or circles to show your answer choices. Sometimes you do this right in your test booklet, but often you show your answer choices on a separate answer sheet. The schedule for the whole school may be changed to give the tests to everyone at the same time. No matter how these tests are given in your school, you should try to do your best.

1. Work through each section of the test as quickly as you can. Do not spend a lot of time on a question that you cannot answer. If there is time left over, then you can go back and try to answer those questions you skipped.
2. Always be sure that the question number and the number of your answer are the same. If you get mixed up, quickly go back to straighten it out. Erase completely, and mark your answers in the proper place.
3. Do not be concerned if you cannot answer all questions. The tests are made difficult on purpose.
4. If you are not sure of an answer, it is wise to guess.
5. Above all, try not to be nervous or upset by the standardized tests. You will probably take many of them throughout your school years.

On the next few pages are several varieties of sample tests made to look like the real ones. However, the questions are taken from the material in this book. You can use them to get acquainted with standardized tests and to practice taking them. Write your answers on paper. Do not write in the book.

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CHAPTER 22 REVIEW

CHAPTER SUMMARY

Section 1 A Great Debate over Expansion Beyond the Seas

American foreign policy in the 19th century grew largely from two broad principles. The first, drawn from Washington's *Farewell Address*, involved steering an independent course and avoiding entanglement in European affairs. The second, expressed in the Monroe Doctrine, opposed European interference in the Western Hemisphere. This policy of noninvolvement still allowed the country to expand rapidly. Except for the purchase of Alaska in 1867, the Civil War halted this growth.

Section 2 The Architects of American Expansionism

The chief leaders of American expansionism were Theodore Roosevelt, Henry Cabot Lodge, Albert Beveridge, and Alfred Thayer Mahan. They believed that the rise of the United States to greatness illustrated Darwin's theory regarding "survival of the fittest." Other Americans believed that our country had an obligation to assist "backward" nations.

Section 3 The War with Spain and the Path of Empire

The longstanding concern of Americans over conditions in Cuba led in 1898 to the Spanish-American War. Two incidents, the De Lôme letter and the sinking of the battleship *Maine*, touched off the war. The United States won, annexing the Philippines, Guam, and Puerto Rico, and gaining independence for Cuba.

Section 4 Consolidating the New American Empire

American power now extended into the Caribbean and across the Pacific. Although the United States had promised independence for Cuba, the Platt Amendment sharply limited Cuba's freedom of action. In Puerto Rico the United States allowed limited self-rule. In the Far East, the United States suppressed a bloody rebellion in the Philippines and sought an "Open Door" to trade with China.

Section 5 Building and Protecting the Panama Canal

The Spanish-American War dramatized the need for a canal across the Isthmus of Panama. Finally, after engineering Panama's independence from Colombia, the United States completed the canal. To protect its interests in the Caribbean, the United States added the Roosevelt Corollary to the Monroe Doctrine, assuring United States domination.

CHAPTER QUI

Vocabulary in same order as in text

Key Terms and People

Explain each of the following:

imperialism	"Remembe... Maine"
Monroe Doctrine	Teller Amendm...
Matthew C. Perry	George Dewey
James Cook	Platt Amendment
Queen Liliuokalani	Insular Cases
Theodore Roosevelt	Emilio Aguinaldo
Henry Cabot Lodge	William Howard Taft
Albert Beveridge	John Hay
Alfred Thayer Mahan	Open Door Policy
Social Darwinism	Roosevelt Corollary
"white man's burden"	"dollar diplomacy"

Reviewing the Main Ideas

Section 1

1. On what two principles was American foreign policy based before the 1890s?
2. What changes did some Americans want to make in foreign policy by the 1890s? Why?

Section 2

1. How were ideas such as the belief in "progress," "survival of the fittest," and the "white man's burden" used to justify imperialism?
2. How did Alfred Thayer Mahan and Albert Beveridge influence Americans' views on foreign policy?

CHAPTER 24
Review

Summary

1. Some energy resources are renewable; others are nonrenewable. 24:1
2. Dams, tidal power, and OTEC are three uses of water resources. 24:2
3. Geothermal power is produced by energy that comes from the internal heat of Earth. 24:3
4. Fossil fuels including oil, coal, and natural gas, contain stored solar energy. Direct solar energy is being tested as an energy source. 24:4
5. The wind can be used to turn turbines and produce electricity. 24:5
6. Electricity can be produced from nuclear energy. Fission is the process now in use, but fusion may be possible in the future. 24:6
7. Stages in coal formation are peat, lignite, bituminous coal, and anthracite. 24:7
8. Oil and natural gas form as the result of the decay of marine organisms. These energy sources, like coal. are limited. 24:8
9. Steam, carbon dio
force out heavy c
10. Currents and wav
11. In the future, sola
Earth as microwa
12. Synfuels are synth
during coal gasifi
are synfuels. 2
13. Biomass fuels are
added to fossil fu
composed of gas
14. Energy efficienc
Earth's energy r

Vocabulary

Write a sentence usi

anthracite
biomass fuel
bituminous coal
breeding
coal gasification
energy
fission
fossil fuels

CHAPTER 6
Review

Summary

1. Elements cannot be broken down by chemical change. Each element is made of only one kind of atom. 6:1
2. In the periodic table, properties of elements repeat at regular intervals. 6:2
3. The present model of an atom is a dense, positive, central nucleus surrounded by a cloud of negative charge. 6:3
4. The elements are arranged in order of increasing atomic number on the periodic table. 6:4
5. Three major particles of atoms are protons, neutrons, and electrons. 6:4
6. Electrons occupy energy levels outside the nucleus of the atom. 6:5
7. The atomic number of an element is the number of protons in the nucleus. 6:4
8. The mass number of an atom of an element is the total number of its protons and neutrons. 6:6
9. Isotopes are atoms of the same element with the same number of protons but different numbers of neutrons. 6:7
10. Elements in the same group have similar properties. 6:8
11. Elements can be classified as metals, nonmetals, or metalloids. 6:9
12. Metals at the bottom of a group are most active. Nonmetals at the top of a group are most active. 6:10

Vocabulary

Write a sentence using the following words or terms correctly.

atom
atomic mass unit
atomic number
average atomic mass
chemical activity
electron cloud
element
energy level
group
halogen
isotope
mass number
metal
metalloid
model
noble gas
nonmetal
nucleus
period
periodic table
transition element

Reviewing Chapter 12

Using Key Words

Number your paper from 1 to 5. Write a short meaning for each word below.

right **constitution**
independence **amendment**
representative

Reviewing Main Ideas

Number your paper from 1 to 4. Choose the correct answer to complete each sentence below.

1. One of the three rights described in the Declaration of Independence is the **a.** right to a home **b.** right to own land **c.** right to be free
2. One of the three parts of our national government is a **a.** city council **b.** President **c.** police department
3. The Bill of Rights says **a.** people can worship as they please **b.** people can do what they please **c.** people have to have a place to live
4. Good citizens have a responsibility **a.** to write what they want **b.** to change the laws **c.** to obey the laws

Thinking Things Over

Should there be a law that makes everyone vote in elections? Write a short paragraph giving your opinion. Tell what the advantages and disadvantages of such a law would be.

Practicing Skills

Suppose you were going to vote for a community leader in your community elections. Make a list of the things you should know in order to vote wisely. Then make a list of the places you could find out this kind of information. Don't just write "newspaper" or "television." Give the names of newspapers, sections of the newspapers, and which radio or TV programs you would watch or listen to. Where would you look for information about a national leader?

If your community has a museum or historic restoration of the colonial or Federal period, take the **whole class** to see artifacts of the period they have been learning about.

Have students prepare answer sheets for the chapter review. When they have finished the review, collect the papers and discuss answers immediately to ensure reinforcement.

Answers to Reviewing Chapter 12

Using Key Words
1. **right**—something that is due to a person by law, or because it is fair or just
2. **independence**—freedom from the control of others
3. **representative**—person who speaks or acts for others
4. **constitution**—plan of government
5. amendment—change

Reviewing Main Ideas
1. c
2. b
3. a
4. c

Thinking Things Over
Answers will vary. Look for an awareness that a major value in our country is personal freedom.

Practicing Skills
Share answers to pool information about issues and reference sources.

SECTION 2 REVIEW

Key Terms and People: Theodore Roosevelt, Henry Cabot Lodge, Albert Beveridge, Alfred Thayer Mahan, Social Darwinism, "white man's burden"

Main Ideas
1. Explain how ideas such as the belief in "progress," "survival of the fittest," and the "white man's burden" were used to justify America's expansionism.
2. How did the ideas of Mahan and Beveridge influence American foreign policy?

APPENDIX C

VERIFICATION MEETING AGENDA

AGENDA

Teacher Verification Meeting
June 29, 30 1987

DAY 1

9:00-9:30 AM		Registration, coffee
9:30-10:00	Session I	PLENARY SESSION Opening remarks, welcome, basic information o Purpose of the meeting o Overview of the project o Expectation of participants o Benefits to participants
10:00-10:45	Session II	Keynote speaker: Dr. Lynne Thrope Objective: To set the overall tone of the meeting
10:45-12:00	Session III	Overview of learner characteristics Objective: 1) Develop common understanding of diverse learners, and 2) review profile form: how was it helpful; what was unclear, what should be added, deleted, combined
12:00-12:30		Reconvene and Report
12:30-1:45		Lunch
1:45-2:15	Session IV	Overview of Textbook Program Analysis Process Review of text taxonomy and analysis forms, definition of terms, discussion of text analysis procedures; introduction of teacher-reviewers
2:15-3:30	Session V	Review of Individual Textbook Programs Objective: To review and compare textbook findings by textbook program
3:30-3:45	Break	
3:45-5:00	Session VI	Review Textbook Programs by Subject and Grade Levels Objective: To come to consensus on strengths and weaknesses of textbooks by subject and grade level

5:00-5:15	Session VII	Wrap Up and Evaluation Objective: To distribute executive summary of text analysis findings
6:00		Dinner/informal evening

DAY 2

8:30-9:00	Session I	General Introduction to Day 2
9:00-10:00	Session II	Verification of Findings and Summary of Recommendations to Publishers Objective: To discuss with teachers how their findings validate our text analysis and to summarize recommendations for publishers that resulted from discussions from Day One.
10:00-10:15	Break	
10:15-11:15	Session III	Review of the Text Analysis Form Objective: To discuss the value of the streamlined analysis form
11:15-11:30	Session IV	Reconvene and Logistics Objective: To come to closure on the form and review remainder of the day
11:30-1:00	Lunch	(Additional time to allow for packing, checking out, etc. prior to lunch)
1:00-1:15	Session V	Strategies for Teachers Objective: To introduce and explain the task
1:15-3:00	Session VI	Strategy Session Objective: To model strategy development so that teachers understand the breadth of possible strategies and the format
3:00-3:30	Session VII	Summary, Charge, and Evaluation Objective: To summarize strategy development and explain next steps

APPENDIX D

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VERIFICATION MEETING PARTICIPANTS

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CONFERENCE PARTICIPANTS

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Mastery Education

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Dr. Judith N. Thelen
International Reading Association

APPENDIX F

CONFERENCE BROCHURE

National Conference on

Improving Textbook Usability

Sponsored By

The U.S. Department of Education,
Office of Special Education Programs

February 1 and 2, 1988

Omni Shoreham Hotel
Washington, D.C.

Presented By

edc

EDUCATION DEVELOPMENT CENTER, INC.
55 CHAPEL STREET, NEWTON, MA 02160
617/969-7100

RMC

RMC RESEARCH CORPORATION
400 LAFAYETTE ROAD, HAMPTON, NH 03842
603/926-8888

THE CHALLENGE

Researchers estimate that students spend up to 75 percent of their classroom time and 90 percent of homework time directly involved with textbook materials.

More than 1.8 million students are classified as having learning problems (an increase of 1 million students in the past decade). In addition, another 10 to 20 percent experience learning, language, or behavioral problems.

A significant body of research about effective instruction, particularly in the area of teaching diverse students, remains to be fully implemented into classroom practice.

CONFERENCE GOALS

To bring together leading publishers, outstanding educators, nationally known researchers, textbook adoption committee members, and representatives of professional organizations to:

- Describe the research project
- Present findings and recommendations
- Disseminate effective teacher-developed instructional strategies
- Work together to develop action plans for:
  - improving textbook analysis
  - improving the usability of existing textbook programs
  - improving future generations of textbook programs

CONFERENCE OVERVIEW

National Conference On

Improving Textbook Usability

Omni Shoreham Hotel
Washington, D.C.

January 31

7 - 9 pm **Conference Registration**

Informal Reception
(Cash Bar)

February 1

8 am **Conference Registration** *(Cont.)*

Continental Breakfast

Welcome Address
Martin Kaufman

Keynote Address
Donna Ogle

Overview of the Study
Project Staff

Lunch

Panel of Experts
Bonnie Armbruster, Rodger Bybee, Jack Gerlovich, Gwenneth MacDonald, Julia Phelps, Roger Rogalin

Large Group Discussion
Reactions to the Panel

Small Group Activities

Dinner

Dinner Speaker
Rodger Bybee

February 2

8 am **Continental Breakfast**

In-Depth Look at the Text Analysis Tool
Project Staff

Action Plans for Improving Textbook Usability
Small Group Activities

Conference Summary

Lunch
Optional

REGISTRATION FORM

Detach and return registration form no later than January 15th to:

Improving Textbook Usability
RMC Research Corporation
400 Lafayette Road
Hampton, NH 03842

YES! I accept the invitation to participate in the National Conference on Improving Textbook Usability.

Name: _____

Title: _____

Organization: _____

Address: _____

_____

Phone: _____

Please check (✓) one box:

- ❑ I will need lodging provided on January 31 AND February 1.
- ❑ I will need lodging provided on February 1 ONLY
- ❑ I do not need lodging.

Please Note: It is important that you plan to attend all conference activities. Meals will be provided during the conference.

THE RESPONSE

Education Development Center and RMC Research Corporation are partners in a project funded by the U.S. Department of Education, Office of Special Education Programs, to analyze textbook programs and recommend ways they can be improved for students with learning problems.

PROJECT COMPONENTS

Reviewed literature on learner characteristics and effective textbook instruction.

▼

Developed and refined a unique analysis tool for reviewing textbook programs.

▼

Analyzed 12 leading science and social studies textbook programs to evaluate instructional design and textbook features.

▼

Met with teachers from 10 states to verify the findings of the textbook analysis.

▼

Formulated preliminary recommendations for improving textbook programs.

▼

And Now...You are invited to attend...

A national conference to stimulate change in textbook usability.

FEATURED SPEAKERS

Martin Kaufman
Martin Kaufman is the Director of the Division of Innovation and Development in the Office of Special Education Programs, U.S. Department of Education. He is currently involved in setting national policy and conducting research on major issues involving the education of handicapped students. He is directly involved in many OSEP research and development projects focusing on textbooks and instructional materials.

Donna Ogle
Donna Ogle directs the Reading and Language Department at National College of Education. Her major interests are in the development of sound teaching strategies for content reading comprehension and in the translation of such strategies into school practice. She currently chairs the NCTE Research Assembly, is on the Board of the National Reading Conference, and is an associate editor of the *Journal of Reading Behavior*.

Rodger Bybee
Rodger Bybee is Associate Director and Senior Staff Associate at the Biological Sciences Curriculum Study at The Colorado College. He has written widely, publishing in both education and psychology. Over the years he has received awards for Leader of American Education and Outstanding Educator in America, and in 1979 was recognized as the Outstanding Science Educator of the Year.

and

Bonnie Armbruster, *University of Illinois*
Jack Gerlovich, *National Council of State Science Supervisors*
Gwenneth MacDonald, *Former Student*
Julia Phelps, *Mastricola Middle School Merrimack, New Hampshire*
Roger Rogalin, *D.C. Heath*

For more information about this conference, please call or write:

Improving Textbook Usability
RMC Research Corporation
400 Lafayette Road •Hampton, NH 03842
(800) 258-0802 or (603) 926-8888

APPENDIX G

LETTERS OF INVITATION

December 15, 1987

Dear

Education Development Center, Inc. and RMC Research Corporation cordially invite you to attend a National Conference on Improving Textbook Usability, to be held February 1 and 2 at the Omni Shoreham Hotel in Washington, DC.

The conference is part of an 18-month study of the usability of elementary and secondary science and social studies textbook programs. It will provide a forum for key decision-makers, including publishers, teachers, administrators, researchers, representatives of professional organizations and adoption committee members to discuss critical issues relevant to textbook usability and jointly develop action plans to further improve textbooks. Recommendations based on our current research into making textbooks more accessible for all students will be reviewed at the conference. We will also present a unique analysis tool for determining textbook usability.

Attendance at the one and one-half day conference is limited to 95 participants. Within this limitation, we are inviting participants who represent a variety of perspectives. Each of the constituency groups will be filled on a first-come basis. There is no charge for conference registration; food, lodging, and meeting expenses will be provided for all conference participants.

We want publishers and developers to take an active role in the discussions and development of action plans at the conference. Therefore, we ask that you attend this conference and also designate 1 or 2 of your company's key decision-makers to attend as well. The one or two staff that you designate should represent your marketing and/or editorial departments. Please distribute the enclosed invitations and conference brochures to those you think would best represent your organization and urge them to attend.

In our search we have identified the following people as possible conference participants:

If you feel other staff are more appropriate, please forward this information at your discretion.

Understanding the quality of textbooks is a very timely issue. We believe this conference will result in positive recommendations for improving textbook usability for diverse learners. In order to participate in this important national forum, we urge you to respond quickly to reserve your place.

Please complete the registration form in the enclosed conference brochure and return it no later than January 15. If you would like more information, please call Paulette Meleen or Lawrence Rayford at RMC Research Corporation (800) 258-0802 or (603) 926-8888.

Sincerely,

Paulette Meleen, Ed.D.
Conference Director

Jean Ciborowski, Ph.D.
Project Director

December 15, 1987

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This is a conference in which participants will, in large part, determine the outcome. Because we believe it is very important to have a variety of perspectives represented in the discussions and the development of action plans, we are pleased to be able to pay reasonable transportation costs as well. Please make your own travel arrangements early enough to take advantage of the lower rates. We will provide you with information on travel reimbursement at the conference.

Understanding the quality of textbooks is a very timely issue. We believe this conference will result in positive changes in this fundamental educational tool. In order to participate in this important national forum, we urge you to respond quickly to reserve your place.

Please complete the registration form in the enclosed conference brochure and return it no later than January 15. If you would like more information, please call Paulette Meleen or Lawrence Rayford at RMC Research Corporation (800) 258-0802 or (603) 926-8888.

Sincerely,

Paulette Meleen, Ed.D.
Conference Director

Jean Ciborowski, Ph.D.
Project Director

enclosure

APPENDIX H

CONFERENCE AGENDA

National Conference on

Improving Textbook Usability

SUNDAY, JANUARY 31

6:00	*INFORMAL GATHERING AND CONFERENCE REGISTRATION*	

MONDAY, FEBRUARY 1

8:00	*CONTINENTAL BREAKFAST AND CONFERENCE REGISTRATION*	*AMBASSADOR ROOM*
8:45	Welcome, Introductions, and Conference Overview	
9:00	Welcome Address: Martin Kaufman	
9:20	Keynote Address: Donna Ogle	
10:00	Question/Discussion Period: Responses to Kaufman and Ogle	
10:30	*COFFEE BREAK*	*AMBASSADOR ROOM*
10:45	Overview of the Textbook Study • Overall Research Findings and Recomendations	
11:45	Questions/Discussion About Textbook Study	
12:15	*LUNCHEON*	*DIPLOMAT ROOM*
1:30	Panel of Experts: Introductions	*AMBASSADOR ROOM*

- Teacher Educator/Researcher: Bonnie Armbruster
- Curriculum Developer: Rodger Bybee
- Publisher: Dan Caton
- Adoption/State Curriculum Specialist: Jack Gerlovich
- Student: Gwynneth MacDonald
- Teacher/Administrator: Julia Phelps

Moderator: Deborah Powell and Project Staff

1:45	Panel of Experts: Topical Discussion	
3:00	*BREAK*	
3:15	Teachers, Administrators, Researchers, Professional Organizations, and State Curriculum and Adoption Committee Representatives meet with Publishers to Develop Action Plans	*ASSIGNED ROOMS*

4:15	Group Leaders will Present Action Plans to Large Group	*AMBASSADOR ROOM*
5:00	Adjournment	
6:00	*RECEPTION AND DINNER* Speaker: Rodger Bybee	*DIPLOMAT ROOM*

TUESDAY, FEBRUARY 2

8:00	*CONTINENTAL BREAKFAST*	*AMBASSADOR ROOM*
8:45	Synthesis of Previous Day's Activity • EDC/RMC Research will present synthesis of Action Plans • Further discussion of Action Plan Issues	
9:45	Presentation of Text Analysis Instrument and Discussion of the Role it Can Play in the Textbook Adoption Process	
10:00	*BREAK*	
10:15	Small Heterogeneous Groups to Review Text Analysis Instrument	*ASSIGNED ROOMS*
11:30	Conference Summary	*AMBASSADOR ROOM*
12:30	*LUNCH (optional for conference participants)*	*EMPIRE ROOM*
1:30	Informal Adjournmen	*AMBASSADOR ROOM*

PROJECT STAFF

EDC, Inc.	RMC Research
Jean Ciborowski	Paulette Meleen
Judith Zorfass	Larry Rayford
Mary Antes	Judy Ballester

APPENDIX I

ANALYSIS TOOL

A Tool for Assessing
INSTRUCTIONAL DESIGN AND TEXTBOOK FEATURES
of
Content Area Textbooks
(Social Studies and Science Textbook Programs)

Education Development Center, Inc.
RMC Research Corporation
January 1988

INTRODUCTION

I. THE PURPOSE OF THIS ASSESSMENT TOOL

This tool is designed to help those charged with selecting textbooks assess how well sound principles of learning and motivation are incorporated in content area textbooks. It looks only at how content is conveyed, not at content itself, and therefore should be used in conjunction with content criteria.

The design of the assessment questions is based on the following assumptions:

- Elementary and secondary students spend as much as 75 percent of their classroom time and 90 percent of homework directly involved with textbook material.
- One reason many students experience learning problems is that, for a variety of reasons, they have difficulty accessing information from textbooks.
- Incorporating some specific instructional guidelines and features in textbooks, such as relating new information to students' prior knowledge, helping students integrate information and ask meaningful questions, accommodating a variety of learning styles, encouraging experiential learning activities, treating fewer concepts in greater depth, and fostering sound instructional reading/learning strategies, will make them more accessible to students with learning problems.
- Using this tool will enable those charged with choosing textbooks make more informed selection decisions.

- Using this tool will help teachers use the strengths and supplement the weaknesses of textbooks they are currently using.

- Good teaching is characterized by three distinct but overlapping phases; within each phase are important features of instruction:

  Phase I--getting students ready to learn--setting a purpose, activating appropriate prior knowledge, previewing the lesson

  Phase II--engaging students in the learning activity--using reading and thinking skills and processes and applying integrative and organizational strategies

  Phase III--having students demonstrate competence and extend knowledge--providing numerous and various opportunities to demonstrate, extend, and apply new knowledge

II. INSTRUCTIONS FOR USING THE ANALYSIS FORMS

This text analysis tool will help you evaluate how well textbook programs (teacher's edition, students' edition, and all ancillary materials) incorporate sound principles of learning and motivation for a diverse student population. The questions on the form are based on research about effective teaching techniques and strategies. However, since the form does not address content issues, we strongly recommend that it be used in conjunction with content guidelines.

FORMAT Questions in this text analysis tool are organized by three phases of learning described earlier. In practice, these divisions are quite fluid; we separate them only for ease in reviewing textbooks.

Each phase begins with a goal and set of objectives for teachers and students, and is followed by a series of questions related to those goals and objectives.

Important terminology is underlined. Definitions of these terms can be found on the facing page.

PROCEDURE We recommend that you analyze at least two chapters in a given text and its related materials (e.g., teacher's resource book, test books, student workbooks). Comparing several chapters will give you a better picture of overall quality. We also recommend that you use the tool with texts from at least two different publishers. Variations in quality become most apparent when you compare textbook programs across publishers.

Duplicate the form so that you have a copy for each chapter you analyze. Read each chapter carefully, indicating on the form whether the information requested is provided ("never," "inconsistently," or "consistently") in the teacher's edition, the student's edition, or both. You may wish to note page numbers and location of examples in the margin and review the examples before rating the quality of the information. Repeat the procedure for each additional chapter.

To interpret the results, look for the number of features that are used consistently and are of high quality. Notice whether they are in the teacher's edition, the student's edition, or both. If they are more often in the teacher's edition, teachers will need to refer to the teacher's edition during the course of instruction. If the features are used inconsistently or are of poor quality, teachers may need to supplement instruction provided in the text.

Prior Knowledge: Information that students already know from experience or previous learning. Research suggests that we integrate and recall information better when it fits into the framework of what we already know and understand. To help students learn, teachers must call forth what students already know and understand and relate that knowledge to the new information. Teachers should be aware that students' prior knowledge could include misconceptions that make integration of new information difficult.

Prerequisite Knowledge: Background knowledge, information that students must have to understand the new lesson; previously learned information that is the foundation for the new learning.

For example, students must know something about the institution of slavery to understand the Civil War; they must know the relationship of metamorphosis to the life cycle of insects; they must know what vibrations are before they can understand how sound travels.

Prerequisite Skills: Skills students need to facilitate new learning; it is assumed that students have already learned these skills. For example, students must learn the meaning of symbols before they can read a map; develop observation skills before conducting experiments; understand sentence and paragraph construction before tackling a research paper.

Core Information: Ideas, concepts and vocabulary that are central to understanding the materials, omitting details, secondary themes, and ancillary information.

Phase I. Getting Students Ready to Learn

Goal: Prepare and motivate students to learn

Objectives: The teachers' guide should help teachers:
1) Understand the goals of the lesson
2) Focus instruction
3) Activate students' prior knowledge
4) Help students preview the structure, vocabulary, and major concepts in the lesson

The students' materials should help students:
1) Understand the purpose of the lesson
2) Activate students' prior knowledge
3) Preview the structure, vocabulary, and major concepts in the lesson

DOES THE TEXTBOOK PROGRAM...	TEACHER MATERIALS				STUDENT MATERIALS			
	Circle one FREQUENCY:			Circle one QUALITY:	Circle one FREQUENCY:			Circle one QUALITY:
	Never	Incons.	Cons.	Poor Excellent	Never	Incons.	Cons.	Poor Excellent
1. Convey a clear purpose for instruction?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
2. Indentify prerequisite knowledge/skills?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
3. Provide a variety of motivating non-text reading activities?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
4. Present information in a way that motivates students to enjoy learning?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
5. Highlight the core information and/or key concepts?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5

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Structure: Pattern of organization; information in a well structure text is logically organized; the organization is reflected in titles, headings, and subheadings, topic sentences, and introductory paragraphs that preview the information to come, etc. Research supports the idea that student learning improves when the text is well structured and students are taught the structure--i.e. compare/contract, cause/effect, sequence, problem/solution, description, enumeration.

Misconceptions: Information that is misunderstood or incorrectly interpreted. Research indicates that students maintain strong commitment to their misconceptions, making the teaching of new, contrasting concepts difficult.

Advance Organizers: Organizers that are provided to students prior to instruction that may be completed while the teacher introduces the lesson or by the students before or during the lesson.

Graphic Organizers: A wide variety of techniques that help students comprehends new information by structuring it in visual ways, such as mapping, charts, diagrams, networks.

Cooperative Learning: (as contrasted with competitive learning): Groups of students working together toward a common goal, free of competition and the pressures of time. Students are not grouped according to ability.

DOES THE TEXTBOOK PROGRAM...	TEACHER MATERIALS								STUDENT MATERIALS							
	Circle one FREQUENCY:			Circle one QUALITY:					Circle one FREQUENCY:			Circle one QUALITY:				
	Never	Incons.	Cons	Poor				Excellent	Never	Incons.	Cons.	Poor				Excellent
6. Provide strategies that relate new vocabluary words and concepts to the students' prior and background knowledge?	N	I	C	1	2	3	4	5	N	I	C	1	2	3	4	5
7. Structure information in a logical way?	N	I	C	1	2	3	4	5	N	I	C	1	2	3	4	5
8. Highlight the structure of the text/lesson material to come?	N	I	C	1	2	3	4	5	N	I	C	1	2	3	4	5
9. Preview text by directing attention to pictures, charts, and chapter/unit headers?	N	I	C	1	2	3	4	5	N	I	C	1	2	3	4	5
10. Hightlight possible misconceptions and suggest techniques for addressing them?	N	I	C	1	2	3	4	5	N	I	C	1	2	3	4	5
11. Provide ideas for advanced/graphic organizers?	N	I	C	1	2	3	4	5	N	I	C	1	2	3	4	5
12. Encourage cooperative rather than competitive learning structures?	N	I	C	1	2	3	4	5	N	I	C	1	2	3	4	5

Reading/Thinking Skills: Skills and processes that help students construct meaning by building bridges between old and new information.

Integrative Strategies: Strategies that facilitate the construction and reconstruction of meaning. They assist learners in linking new information with old so that the learning process is both generative and active.

Connective Words and Phrases: Words and phrases that show the relationship between two or more pieces of information--i.e.: for example, but, therefore, because.

Chunks of Information: Organizing information by grouping related facts

Referents: Words to which other words or phrases refer. The person, place, or things to which pronouns refer must be clear.

For example, in the following, to whom does "they" refer? Groups need rules. Rules can help people get along together. They get things done more quickly and simply.

Phase II. Engaging Students in the Learning Activity

Goals: Help teachers understand the reading/learning skills and processes needed to help students acquire knowledge in the lesson.

Guide teachers in facilitating the learning process.

Help students learn the skills and processes needed to acquire knowledge from the lesson

Objectives: Information in the teacher's guide should help teachers:
1) Teach/apply reading and thinking skills and processes
2) Teach/apply integrative strategies
3) Teach/use organizational strategies
4) Make the learning process explicit

Information in the student's materials should help students:
1) Learn/apply reading and thinking skills and processes
2) Learn/use organizational strategies

DOES THE TEXTBOOK PROGRAM...	TEACHER MATERIALS					STUDENT MATERIALS				
	Circle one FREQUENCY:			Circle one QUALITY:		Circle one FREQUENCY:			Circle one QUALITY:	
	Never	Incons.	Cons	Poor	Excellent	Never	Incons.	Cons.	Poor	Excellent
1. Convey content that is appropriate and clear?	N	I	C	1 2 3 4 5		N	I	C	1 2 3 4 5	
2. Provide strategies to aid students in word analysis/decoding?	N	I	C	1 2 3 4 5		N	I	C	1 2 3 4 5	
3. Provide connective words and phrases that help readers make transitions between chunks of information?	N	I	C	1 2 3 4 5		N	I	C	1 2 3 4 5	
4. Make referents clear?	N	I	C	1 2 3 4 5		N	I	C	1 2 3 4 5	

Active Reading Techniques: Strategies that require interaction between the reader and the text.
For example, during the reading process, a student can make notes, circle new words, number main ideas, outline, highlight important information, paraphrase, chunk, and make summarizing statements.

Self-Questioning Techniques: A monitoring strategy for students in which they ask themselves question in order to formulate or search for answers or to see how well they understand the new information.

Visual Imagery Techniques: Techniques that helps students remember information by forming mental images of people, places, things, ideas, or events decribed in the text.

Paraphrasing Techniques: Stopping periodically at selected points in the text to express the meaning of the passage just read in words other than those used by the author.

Mnemonic Strategies: Strategies that help students remember information, such as rhymes, visual imaging, acronyms, verbal rehearsal, and categorizing

For example, to remember the number of days in the month, "thirty days hath September...;" to remember points on a compass, "Never Eat Sour Worms;" development of the word scuba as an aid to remembering "self-contained underwater breathing apparatus"

Reinforcement Activities: Any of a number of activities that strengthen students' understanding of new information, such as experiments, games, projects, and practice sheets.

DOES THE TEXTBOOK PROGRAM...	TEACHER MATERIALS				STUDENT MATERIALS			
	Circle one FREQUENCY:			Circle one QUALITY:	Circle one FREQUENCY:			Circle one QUALITY:
	Never	Incons.	Cons	Poor Excellent	Never	Incons.	Cons.	Poor Excellent
5. Provide guidance about active reading techniques?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
6. Provide guidance about student self-questioning techniques?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
7. Provide guidance about visual imagery techniques?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
8. Suggest the use of graphic organizers?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
9. Help integrate important information?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
10. Encourage written/oral paraphrasing techniques?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
11. Provide ideas about other mnemonic strategies?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
12. Provide opportunities for a variety of hands on experiences?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
13. Provide ideas for a variety of interesting reinforcement activities?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5

Positive Reinforcement: Appropriate, positive (as opposed to negative) statements about students' performance, such as brief verbal compliments, a smile, a pat on the back, hand signals--such as a thumbs-up sign.

Maximizing the Number of Acceptable Student Responses: Providing many opportunities for students to answer correctly, by asking questions that have a number of possible correct answers or that call for opinions or experiences

Phase III. Having Students Demonstrate Competence and Extend Knowledge

Goal: Provide a variety of ways for students to demonstrate and use their new information so they feel successful.

Objectives: Information in the teacher's guide should help teachers:

1) Provide numerous opportunities for students to demonstrate mastery of knowledge, skills, and processes
2) Provide a variety of ways for students to demonstrate competence
3) Provide ways for students to extend and apply new knowledge in meaningful, purposeful activities in and out of school

Information in the student's edition should:

1) Provide numerous opportunities for students to demonstrate mastery of knowledge, skills, and processes
2) Provide a variety of ways for students to demonstrate competence
3) Provide ways for students to extend and apply new knowledge in meaningful, purposeful activities in and out of school

DOES THE TEXTBOOK PROGRAM...	TEACHER MATERIALS				STUDENT MATERIALS			
	Circle one FREQUENCY:			Circle one QUALITY:	Circle one FREQUENCY:			Circle one QUALITY:
	Never	Incons.	Cons.	Poor Excellent	Never	Incons.	Cons.	Poor Excellent
1. Encourage teachers to make articulate, positive statements when students demonstrate a level of mastery?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5
2. Encourage maximizing the number of acceptable student responses?	N	I	C	1 2 3 4 5	N	I	C	1 2 3 4 5

Test-Taking Strategies: Strategies that enable students to perform to their personal capabilites in test situation.

DOES THE TEXTBOOK PROGRAM...	TEACHER MATERIALS							STUDENT MATERIALS						
	Circle one FREQUENCY:			Circle one QUALITY:				Circle one FREQUENCY:			Circle one QUALITY:			
	Never	Incons.	Cons	Poor			Excellent	Never	Incons.	Cons	Poor			Excellent
3. Provide opportunities for a variety of hands-on demonstrations of competence?	N	I	C	1	2	3	4 5	N	I	C	1	2	3	4 5
4. Extend the use of new knowledge beyond the classroom?	N	I	C	1	2	3	4 5	N	I	C	1	2	3	4 5
5. Include ideas for home activities and ways parents and students can work together?	N	I	C	1	2	3	4 5	N	I	C	1	2	3	4 5
6. Provide test-taking strategies?	N	I	C	1	2	3	4 5	N	I	C	1	2	3	4 5

OVERALL USABILITY OF THE TEACHER'S EDITION

1.	There is sufficient background information provided for the teacher.	1	2	3	4	5
2.	The teacher's edition is designed to facilitate the use of the other components.	1	2	3	4	5
3.	The teacher's materials are designed to supplement and complement one another.	1	2	3	4	5
4.	The materials are good for both new and experienced teachers. The materials provide guidance for those who need it and shortcut informational materials for those with more experience.	1	2	3	4	5
5.	The information in the front matter is reflected in the text.	1	2	3	4	5

Space is provided below to record specific comments:

Positive

Negative

OVERALL USABILITY OF THE STUDENTS' EDITION

1. The author speaks directly to the reader (i.e., uses pesonal pronouns).	1	2	3	4	5
2. The text is appropriate in terms of complexity and density of information.	1	2	3	4	5
3. The material is usable for students with a range of learning styles.	1	2	3	4	5
4. The materials include a variety of hand on/experiential activities.	1	2	3	4	5
5. The student materials complement and supplement one another in content, style, and level of difficulty.	1	2	3	4	5

Space is provided below to record specific comments:

Positive

Negative